AMERICAN GAS ASSOCIATION MONTHLY

Vol. II No. 10

October, 1920

"Our social system rests largely upon the sanctity of private property; and that state or community which seeks to invade it will soon discover the error in the disaster that follows. The slight gain to the consumer which he would obtain from a reduction in the rates charged by public service corporations is as nothing compared with his share in the ruin which would be brought about by denying to private property its just reward, thus unsettling values and destroying confidence."

—U. S. Supreme Court—

ENTERED AS MATTER OF SECOND CLASS AT THE POST OFFICE, EASTON, PA.
Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, Authorized July 16, 1918

CONTENTS

VOLUME II OCTOBER, 1920 NUMBER 10

PAGE

A Report on Gas Securities 604
Accounting Section 610
Advantages of a Reasonable Standard of Calorific Value for City Gas 595
Advertising Section 625
An Ultimatum Delivered to Notoriety Seekers 626
Balopticon Machine Available for October 621
Benefit in Exchange of Sales Plans 629
Building Program and the Plight of Gas Companies 616
Canada's Gas Men Gather 618
Classified Directory—Manufacturers of Gas Equipment 647
Commercial Section 629
Editorials—Post Your Story in the Path of Every Eye 594
The Hare and the Tortoise 594
One Hundred Per Cent. 594
Effect of Depreciation Charges on Freight Rates under the Interstate Commerce Act 619
Employment Bureau 656
Frequency, Severity and Costs of Accidents 614
Gas Industry's National Convention 607
Gas Lighting Should Not be Neglected 630
Helping the A. G. A. Correct Misrepresentation 609
Keeping at It 599
Manufacturers' Section 637
Men Alone Buy 20 Per Cent. of Gas Fixtures 618
Modern Journals for Corporation Accounting 622
Publicity the Only Wise Policy 625
Rate Increases Secured—List No. 38 645
Service Charge versus Minimum Rate 600
Special One-Day Gas Range Campaign 631
Suggested Equipment for the Recovery of Tar and Ammonia in the Small Gas Plant 641
Technical Section 641
There Are Many Ways of Telling a Story 602
Treating Tool Steel in Gas Fired Furnaces 636
Window Display Suggestions for October—A. G. A. Service No. 19 634

AUTHORS

Addinsell, H. M.—A Report on Gas Securities 602
Duvall, B. A.—Special One-Day Gas Range Campaign 631
Hewitt, Arthur—Advantages of a Reasonable Standard of Calorific Value for City Gas 595
Phillips, A. I.—Suggested Equipment for the Recovery of Tar and Ammonia in the Small Gas Plant 641
Summers, Snowdon H.—Keeping at It 599
Ulbricht, Emil—Modern Journals for Corporation Accounting 622

FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

AMERICAN GAS ASSOCIATION MONTHLY

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MONTHLY
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130 E. 15th St., NEW YORK, N. Y.

Vol. II OCTOBER, 1920 No. 10

Post Your Story in the Path of Every Eye

The fundamental requisite of advertising is *attraction*. Before an idea may be put over the attention of the passerby or the reader must be attracted. Most eyes are more susceptible to attraction than the other senses, even going so far as to include hearing. No doubt this is because the eye is constantly forced to shift its focus, and in that very act it may be captured by an unusual interruption. Although strange noises may startle us it is true that the average thinker concentrates regardless of sound. We may shut our eyes to escape disturbance but we seldom do and in the process of reading current matter in which so much advertising is done that strategy is impossible.

Therefore granting that the vision is the principle point of attack advertisers have based their work accordingly, and as a consequence the American, who lives in the land that originated the slogan, "It Pays to Advertise—" is besieged on all sides by inanimate advertisers that shriek their wares. And there isn't a doubt but that the average child of Uncle Sam knows more bill-board slogans than he does divine commandments; — "Chesterfields, — they satisfy," — "Ask Dad, he knows," — "Eventually, why not now," — and so on; — wherein lies the idea of the poster.

First, to attract, — easily done with great splotches of any primary color which spring out at your vision like a trumpet blast speaks to the ear drum. The passing eye may not escape the assault of a splash of vivid red or vibrant blue. Then once having succeeded in inviting the attention, the idea itself must do the rest.

So the A. G. A. in its Emergency work has accepted this form of advertising (see page 605) and has prepared a group of five posters for the use of the gas industry in the effort it is making to "tell the people." Any doubt you may have as to their effective use should be dispelled by the mere thought of the posters used in the Great War. Is there one of us who failed to marvel at the striking publicity work these Paper Recruiting Forces did in stirring our thoughts and our feelings to double duty. What the war posters, with their colors and their suggestions accomplished in a big way the A. G. A. posters may do for our industry.

Tell your story to the public with pictures as well as words and SAY IT WITH POSTERS ! ! !

The Hare and the Tortoise

Truth may run under handicap, but in the end it is first over the line for it is a fundamental law that is as old as Man.

The gas industry has been fighting for several years for reasonable operating conditions. It has been fighting for several months for its very existence. The purposes, plans and hopes of the Emergency Committee might well be described as the "Industry's Last Stand !" We had tried, perhaps faintheartedly, in the past as individuals and small groups but the Emergency Committee was to present the whole truth to the whole public.

The readers of newspapers published in all parts of the country cannot fail to be impressed by the distinct change in the tone of editorials and articles relating to the public utility, and particularly, to the gas industry. From open hostility in many cases to an attitude of fairness characteristic of the American people, the press is at last presenting our part of the story.

During no period since gas was first made, have so many rate increases been reported. We may well find in the change a profitable lesson. The elements of suspicion and antagonism are disappearing and truth is gaining ground. Galena turned out the gas, but it also turned on the light ! !

One Hundred Per Cent.

Were every state in the Union to follow the example of Connecticut there would be no need for the great map in the Board Room of the Association Headquarters with its array of tiny black and red pins; there would need be no continued effort to convince the doubters in the gas industry of the value of membership in this National organization; and all of that effort, time and money might be utilized in more constructive work for us all.

The gas companies in the Nutmeg state are 100 per cent. in the American Gas Association, which proves that its gas men have the enthusiasm, the courage and the vision that is necessary in an industry which at this time needs every bit of co-operation, of loyalty and of faith that its members can bestow upon it.

And with Connecticut in the Membership Honor Roll are South Carolina, Colorado, Oklahoma, Arkansas and Utah, states less dense in population and number of gas companies, but just as loyally with us, nevertheless.

AMERICAN
GAS ASSOCIATION
MONTHLY

Vol. II OCTOBER, 1920 No 10

Advantages of a Reasonable Standard of Calorific Value for City Gas—Experiences in Canada

ARTHUR HEWITT

THE writer has stated on numerous occasions during the past ten years his conviction that so far as the ordinary gas appliances installed in households are concerned, whether these appliances be used for lighting or for cooking, there would be little, if any, more gas used if the calorific value of the gas be reasonably low, than would be the case with gas of a higher calorific value.

In reply to inquiries that have been made, directly and indirectly, for argument and data to support this opinion, and in response to a request from officials of the American Gas Association, I have ventured to set forth in very simple form what appear to me to be the facts of the case.

First, let us consider the conditions under which the calorific value of city gas is determined. The chemist, highly skilled, in his laboratory, is supplied with a calorimeter, with proper accessories. He has facilities which enable him to control (a) atmospheric temperature, (b) water temperature, (c) gas pressure. He is able to so adjust and re-adjust the Bunsen burner of the calorimeter that perfect combustion is maintained under all conditions, no matter what kind of gas he may be using. Under such circumstances, he is able to determine with great accuracy the actual heating value of each and every variety of gas, the results representing, in respect of each grade of gas, 100 per cent. efficiency.

Having determined, by means of the calorimeter, a standard, let us take a gas having a determined heating value of 600 B. t. u.'s per cubic foot. This gas is supplied to an ordinary gas range. A kettle of water is placed over the lighted burner. With the best possible adjustment of the burner, it will not be possible to secure more than about 50 per cent. efficiency from the gas, and this efficiency will decrease greatly and very rapidly if the burner adjustment be not exactly suited to the quality of the particular gas supplied. Too much or too little air will

reduce the temperature of the flame and increase the quantity of gas required to boil the water. But, as I have stated, even with perfect burner adjustment, 50 per cent. is about the limit of efficiency obtainable in the boiling of a kettle of water, so that 50 per cent. of the 600 B. t. u. gas has been lost.

We must admit, however, that in practice the average gas stove is not likely to be so accurately adjusted that the maximum efficiency can be obtained. Further, we know by experience that in many households burners are lighted before they are required, and gas is left burning longer than is necessary—that is, there is neglect in shutting off the gas.

My whole point here is that, taking into account the *necessary* loss of efficiency, and the *waste* due to carelessness and neglect, only a comparatively small proportion of the initial calorific efficiency is realized in practice—would it be 20 or 25 per cent? Now this 600 B. t. u. gas has cost a lot of money to produce, and 75 to 80 per cent. of its efficiency has been lost.

Let us now take, for comparison, a gas having a calorific value of, say, 475 B. t. u.'s per cubic foot. In the first place, it has taken less coal and less gas oil per unit, and has therefore cost less to produce—and we must not lose sight of the fact that it is *the ultimate consumer who must pay the whole cost of the gas,* whatever its quality may be. In the second place, this lower quality can be kept constant more easily than can a richer quality.

This 475 B. t. u. gas, as in the case of the 600 B. t. u. gas, is supplied to an ordinary gas range. A kettle of water is placed over the lighted burner. Estimating that you get the 50 per cent. efficiency, as in the case of the 600 B. t. u. gas, and that, allowing for *waste* and *carelessness,* you secure only 20 to 25 per cent. practical efficiency, your loss of 75 to 80 per cent. of the lower B. t. u. gas is much less costly than the same percentage of loss with a richer gas; but there can be no question in the mind of anyone who has had experience in regard to the matter, that the thermal efficiency of the 475 B. t. u. gas is proportionately greater than the thermal efficiency of the 600 B. t. u. gas, and there will be less variation in the practical results realized.

Flame Temperature

Flame temperature is a very important item to be considered in connection with the fixing of an economic standard for gas. The constituents of both coal gas and water gas which give to the gas its calorific value are carbon monoxide, hydrogen, methane and its homologues (saturated hydrocarbons), ethylene and its homologues (unsaturated hydrocarbons), and benzene and its homologues (aromatic hydrocarbons).

Of all these gases, hydrogen and carbon monoxide have the smallest calorific value. "Blue" water gas, which is composed of equal volumes and the hydrogen and carbon monoxide, has a calorific value equal to the mean of theirs, and amounting to 316 B. t. u.'s per cubic foot.

But the flame temperature of carbon monoxide (3760° F.) is the highest among all the gases considered, and that of hydrogen (3542° F.) is very close to it.

Benzene, on the other hand, with a calorific value of 3845 B. t. u.'s per cubic foot, has a flame temperature of 3662° F., less than that of carbon monoxide, and only a little above that of hydrogen. Its homologue, mesitylene, has the highest calorific power (6106 B. t. u.'s) of all the gases considered, but its flame temperature (3606° F.) is less than that of

carbon monoxide and only a trifle above that of hydrogen.

The cause of this is that the higher the calorific value of a gas, the more air is required to burn it, and the cooling effect of the nitrogen contained in this air very nearly counter-balances the extra heat set free during combustion; so that within wide limits, "the flames of all gases and mixture of gases *burnt with the proper quantity of air* have approximately the same temperature."

TABLE SHOWING CALORIFIC VALUES OF CERTAIN GASES, AND THEIR CALCULATED FLAME TEMPERATURES.

		Net calorific value B. t. u's per cu. ft.	Flame temp. F.
Carbon monoxide	CO	341	3760°
Hydrogen	H_2	291	3542°
Saturated Hydrocarbons			
Methane	CH_4	957	3326°
Ethane	C_2H_6	1694	3378°
Propane	C_3H_8	2436	3416°
Butane	C_4H_{10}	3189	3434°
Pentane	C_5H_{12}	3926	3444°
Unsaturated Hydrocarbons			
Ethylene	C_2H_4	1564	3632°
Propylene	C_3H_6	2311	3589°
Butylene	C_4H_8	3048	3560°
Amylene	C_5H_{10}	3780	3540°
Aromatic Hydrocarbons			
Benzene	C_6H_6	3845	3662°
Iolnene	C_7H_8	4578	3632°
Mesitylene	C_9H_{12}	6106	3606°

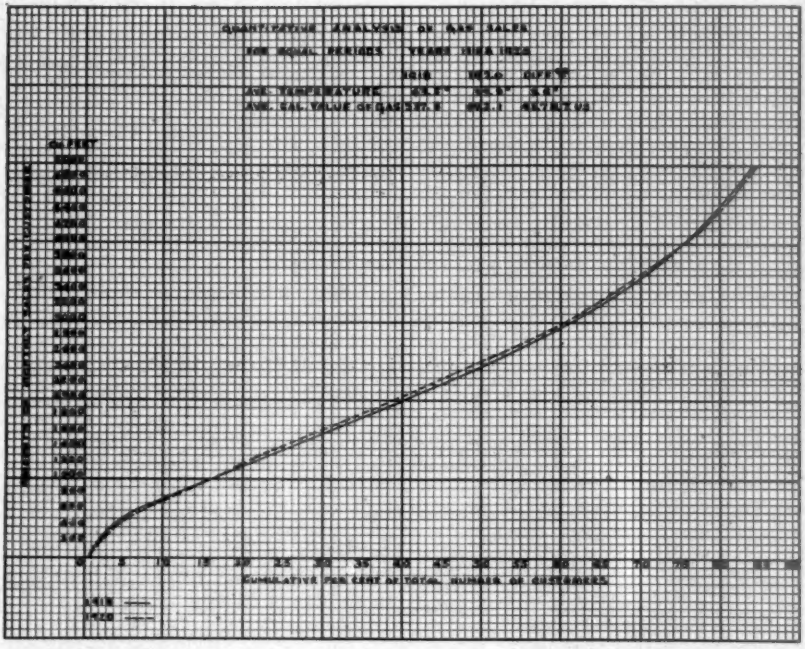
What Actual Experience in Operating under a Moderate Calorific Standard has Accomplished in Canada.

A minimum calorific standard of 450 B. t. u.'s was fixed by the Canadian Government as a temporary measure in November, 1919, and was to be continued for a period of four months. This standard was the more readily approved because of the difficulty in securing coal and oil for the manufacture of gas, and the great necessity, from a national point of view, of conserving these raw materials to the utmost possible extent.

It was, of course, not practicable for gas companies to satisfactorily re-adjust their methods and operations to a new standard, unless they could anticipate a degree of permanence in that standard. This fact was pointed out to the Government, and as there had in the meantime been no improvement in the situation regarding coal and oil, the limit of time during which the new standard was to be effective was removed in March last.

The results realized so far have been most satisfactory to all interests concerned. While the prices of coal, oil and other raw materials and supplies used by gas companies have advanced over prewar rates from 200 to 400 per cent., and labor costs have risen more than 100 per cent., the price paid by consumers for gas has been advanced by only a fraction of these figures. Had the Canadian gas companies not been able to effect economies in manufacture, there can be no question but that the price of gas must have been increased enormously beyond the present levels. The saving has been entirely to the advantage of the gas consumers.

As evidence of the fact that in practice there has not been any appreciable increase in the monthly quantities of gas used by consumers since the reduction in the standard, the following comparative statement has been prepared. This statement relates to a company having 120,000 customers, and shows the percentage of consumers who, during the months of April, 1918, and April, 1920, used the varying quantities of gas from 0 to 5000 feet per month (the number of consumers using within these limits being 85 per cent. of the whole), and the B. t. u. value of the gas supplied in each period. It will be noted that in one column is given the actual percentage of consumers using from 0 to 5000 feet per month, and in the other the cumulative percentage.


QUANTITATIVE ANALYSIS OF GAS SALES
FOR EQUAL PERIODS YEARS 1918 1920
1918 1920 DIFF'CE
AVE. TEMPERATURE 43.5° 45.1° 1.6°
AVE. CAL. VALUE OF GAS SOLD 537.8 492.1 45.7 B.T.U.S
CU. FEET
CUMULATIVE PER CENT OF TOTAL NUMBER OF CUSTOMERS
1918
1920

The information is shown in curve on the accompanying illustrative chart.

ANALYSIS OF GAS SALES.

Amount of Sale. Cu. feet	April 1918		April 1920	
	Per cent. of total customers	Cumulative per cent.	Per cent. of total customers	Cumulative per cent.
0	0.75	0.75	0.66	0.66
100	0.38	1.13	0.52	1.18
200	0.52	1.65	0.65	1.83
300	0.74	2.39	0.90	2.73
400	1.05	3.44	1.16	3.89
500	1.34	4.78	1.53	5.42
600	1.75	6.53	1.76	7.18
700	1.90	8.43	1.93	9.11
800	2.14	10.57	2.03	11.14
900	2.36	12.93	2.00	13.14
1000	2.44	15.37	2.23	15.37
1100	2.46	17.83	2.34	17.71
1200	2.60	20.43	2.26	19.97
1300	2.49	22.92	2.26	22.23
1400	2.55	25.47	2.36	24.59
1500	2.55	28.02	2.51	27.10
1600	2.67	30.69	2.59	29.69
1700	2.51	33.20	2.57	32.26
1800	2.50	35.70	2.53	34.79
1900	2.48	38.18	2.37	37.16
2000	2.59	40.77	2.55	39.71
2100	2.34	43.11	2.32	42.03
2200	2.40	45.51	2.24	44.27
2300	2.18	47.69	2.27	46.54
2400	2.23	49.92	2.20	48.74
2500	2.05	51.97	2.02	50.76
2600	2.06	54.03	2.10	52.86
2700	2.02	56.05	2.02	54.88
2800	1.94	57.99	1.95	56.83
2900	1.81	59.80	1.93	58.76
3000	1.80	61.60	1.86	60.62
3100	1.67	63.27	1.72	62.34
3200	1.63	64.90	1.66	64.00
3300	1.54	66.44	1.66	65.66
3400	1.52	67.96	1.48	67.14
3500	1.38	69.34	1.48	68.62
3600	1.28	70.62	1.48	70.10
3700	1.28	71.90	1.47	71.57
3800	1.16	73.06	1.36	72.93
3900	1.19	74.25	1.28	74.21
4000	1.12	75.37	1.25	75.46
4100	1.02	76.39	1.15	76.61
4200	1.02	77.41	1.04	77.65
4300	0.92	78.33	1.04	78.69
4400	1.00	79.33	0.96	79.65
4500	0.88	80.21	0.90	80.55
4600	0.86	81.07	0.91	81.46
4700	0.81	81.88	0.91	82.37
4800	0.73	82.61	0.82	83.19
4900	0.77	83.38	0.77	83.96
5000	0.74	84.12	0.77	84.73

Average Calorific Value of Gas:

April, 1918 ..... 537.8 B. t. u.
April, 1920 ..... 492.1 B. t. u.

Difference 45.7 B. t. u.

Keeping At It

By SNOWDON H. SUMMERS, Director, Emergency Committee

THE Emergency Committee's campaign is bearing fruit. It may be stated that in some localities the fruit is small and not many to a tree, but this is due to various causes in varying degrees and is a situation that soon will be overcome. All things taken into consideration, the work of telling the general public the truth about the extremely critical situation in the gas industry has moved rapidly, progressed favorably, and right now is gathering increased momentum to cope with that general speeding up that comes in all phases of business and professional life with the passing of the summer vacation months.

The effect of the Emergency Committee's work has been widespread and quickly felt. As an example, there may be stated the fact that four months ago it was a rare thing to find anywhere in the thousands of daily newspapers any editorial comment on the gas situation or public utility problems in general. Now they come every day almost, and by far the greater percentage of them express viewpoints favorable to the gas industry and the utilities. And it should not be forgotten that this sentiment has grown up in the face of unusual and tremendous demands on newspaper space, together with an unprecedented shortage and cost of print paper. The gas industry is not the only one to have felt enormous cost production increases. Publishers everywhere have the same economic problems to solve—the same cost and wage increases.

But, in spite of the fact that news print just now is costing the publisher $130 a ton at contract prices and around $175 a ton when bought in the open market; in spite of the two great national political campaigns, and in spite of scores of other and divers pieces of "big news," the Emergency Committee endeavor is bearing fruit—and fruit that has no specks and is sound at the core. The Committee can find no fault with its treatment at the hands of the public press. Editors and publishers have been in most cases more than generous, and there is little doubt that this attitude has been influenced by the fact that editors as a class have been made to see the real menace to their own communities, wherever and however their local gas plant and their local utilities have been imperiled.

These men have been the gas man's best friends whenever that man has given them a proper opportunity to show friendship. They are the strongest allies to-day the gas man has, or can have, and the real seriousness of the existing situation, the causes and the remedies, cannot properly be placed before the vast army of gas consumers except through the medium of the nation's newspapers.

Now, the fact that the newspapers have been good to us, and doubtless still will continue to be so just so long as we are on the level with them, does not tell the whole story. The fact remains that there should be and must be more and closer co-operation between the gas company executive and his home newspaper. This does not mean that the contact is to be personal only. A newspaper wants news to-day, to-morrow, and next week; first, last and all the time. A newspaper cannot exist without news any more than a gas man can exist without gas oil and coal. Every gas company official should make it his business to see that things happen that make news. When a gas man tells the real estate men and contractors and builders of his city just how the present gas situation affects

the building trades in general, he is creating news, and he is just about certain to find a report of his statements in his local paper, and incidentally, he has once more put before the public—before his gas consumers—the fact that a continued gas service depends upon a fair rate.

So, while the Emergency Committee campaign is bearing fruit, let no one say there is not a lot of room for a bigger and a better crop. It also is a fact that to get the biggest and the best yield there must be constant and continued co-operation on the part of every official of every gas company in the United States and Canada.

Service Charge versus Minimum Rate

OF interest to all gas companies who are endeavoring to obtain a service charge from regulatory bodies, is the report recently submitted to the people of Gloversville, N. Y., by a special committee of five members of the local Chamber of Commerce who were appointed to investigate the subject on behalf of the consumers of the Fulton County Gas and Electric Company, of which L. C. Smith is general manager, and to determine whether a service charge or a minimum rate would be the more equitable.

In its report the committee not only favors the service charge but presents its arguments in such a logical and fair-minded way that they will serve to help many companies who are in need of constructive information on the subject in view of similar petitions. Of particular interest is the fact that the committee admitted that it went into the matter opposed to the service charge and believing that the minimum rate would solve the problem of additional revenue necessary more equitably than the proposed service charge.

In the course of their investigation, the members evidently underwent a complete change of mind, for the report reads:

"After an analysis of the figures of the company we can see no grounds to recommend opposition to the proposed manner of increasing consumer gas costs and after careful study believe the proposed service charge to be more equitable to all consumers than either a minimum rate or an increased rate to $1.80 per 1,000 cubic feet. Under the proposed service charge your committee believes that every consumer of gas pays his equalized costs of the service and neither the small consumer nor the large consumer is compelled to carry a load that should be shared by both."

The Committee lends additional weight to the above argument by quoting the decision made by Commissioner Carr of the Second District, New York Public Service Commission, in the electric rate case of the Lockport Light, Heat and Power Company, decided January 31, 1918, in which it is stated:

"The principal attack was made on the service charge for residence lighting. It was argued that the small consumer was made to pay more than a fair amount for his electricity and that there was no justification for such a charge. Because an increase is made in the amount that the small consumer has paid in the past, due to the fact that he has not been paying fair share of the burden incident to his service, is no reason why he should get that service at the expense of the other consumers who use larger quantities of electricity. We have never seen any plausible explanation of the theory that the consumer of small quantities of electricity should be supplied at less than the cost to the company serving him. As a matter of fact such a claim cannot be successfully defended.

"It is argued that the service charge raises the rate of the small consumer who is least able to pay and lowers that of the larger consumer who is presumably in better circumstances, yet we will not presume to, nor does the law require us to, compel a company sup-

plying electricity to furnish it to the small consumer at less than cost and at the expense of those who may be better able to pay, and yet this is the inevitable result if electricity is sold for residence lighting purposes on a flat kilowatt hour basis."

While the above decision refers to consumption of electricity, the principle involved, as made clear by the Gloversville committee, would apply equally to the consumption of gas.

Taking up the local situation in detail, the Committee found that of the 9,930 meters in service by the Fulton County Gas and Electric Company to-day, approximately 6,500 are in Gloversville. An analysis of the meter ledger showed that 25 per cent. of these consumers of gas had paid less than $12 per year under the old rate. For the year ending May 31, 1920, 643 consumers paid less than $6, with 967 consumers paying between $6 and $12, or a total of 1,610 meters out of the 6,500 meters in the city.

"Of the 9,930 meters," says the report, "9,446 or 95 per cent. will come under the head of the three-five light meter which will be service-charged at 50 cents per month; 468 at 75 cents and 16 at $1.00. The meters of the 75 cent and $1.00 charge class are principally in homes where automatic heaters are installed that necessitate a bigger flow of gas than the average house meter permits, and in factories."

Some of the arguments leading up to the adoption of the service charge are as follows:

"First, we find that a digest of the company's operating costs proves that with neither a minimum charge nor a service charge, a $1.80 gas rate instead of $1.50 would be inevitable. Many citizens of the State are charging that.

"Second, as the analysis of the number of meters that have been paying $12 a year or less proves, the $1.80 gas would work a hardship upon 75 per cent. of the consumers of the city, making them carry a burden that should be shared by the other 25 per cent. For example the average consumer burns 3,000 feet of gas a month. Under the proposed new rate of $1.50 plus the 50 cent service charge, his bill would be $5.00. With the inevitable rate of $1.80 if the service charge be abandoned, his bill would be $5.40, showing a saving of 40 cents under the proposed plan.

"Third, the minimum gas rate is inequitable. A sample case cited is the best proof. Mr. A. and Mr. B. are in the minimum class which is placed, say, at $1.00. Mr. A. uses 90 cents worth of gas a month. He pays $1.00. Mr. B. uses 20 cents worth of gas a month. He also pays $1.00. If the interest on the service investment to that residence or office is 50 cents, the company sustains a loss from Mr. A. of 40 cents that must be made up by some other consumer while it has made a profit of 30 cents off Mr. B."

As determined by the Committee, the additional annual revenue under the proposed increases will be as follows: Increase of 30 cents per thousand cubic feet, $57,461; installation of service charge, $61,080; total $118,541. Under the 1920 estimate this will give the company a gross income of $57,015 or just about what it was making back in 1915, regardless of the fact that it was doing an increased business at the time.

According to Walter P. Schwabe, vice-president and general manager of the Northern Connecticut Light and Power Company, at Thompsonville, Conn., the service charge rate is now in use in at least forty states in the Union and has been passed on by eighteen utility commissions as the most equitable method of charge.

"It is of interest to know," says Mr. Schwabe, "that the consumers' charge or service charge schedule has been generally regarded with misgivings and even with hostility when first introduced. Very brief experience with it, however, has invariably changed the attitude of its most earnest opponents when they have seen that it offers a possibility for actually lower rates than the flat schedule."

Company members having service charges in operation are asked to advise Association headquarters in order that a complete list of such charges may be brought up to date.

There Are Many Ways of Telling A Story

HAVE you given any attention to the A. G. A. Emergency posters and stickers, samples of which have been sent you? Have you considered the use to which these may be put in presenting the facts of the gas industry's problems to the American people in the most effective manner and in the fewest number of words?

A brilliant hue will attract the eye where a page of wordy matter would pass unnoticed. These posters are full of color; the idea behind each is forceful in its impression, bears a direct message and its story will "stay put" in the mind.

The gas industry will recognize the service this latest effort of the Emergency Committee is capable of accomplishing. On the following page we have again presented these posters (in black and white only) and we repeat the suggestion that you make the most of this new offer and *get in touch with these posters at once.*

ALL ABOUT THE POSTERS.

Size, 48" by 22".
One complete set of the five posters will be sent every gas company, *free.*
Additional copies of each design will be furnished at 25 cents each.
Use them in windows, display rooms, delivery wagons, and billboards.

ALL ABOUT THE STICKERS.

Exact reproductions of the posters reduced in size to 2" by 2¼".
These will be furnished at $3.00 per 1,000 for each design.
Stick them on gas bills, out-going mail, pay envelopes, etc.

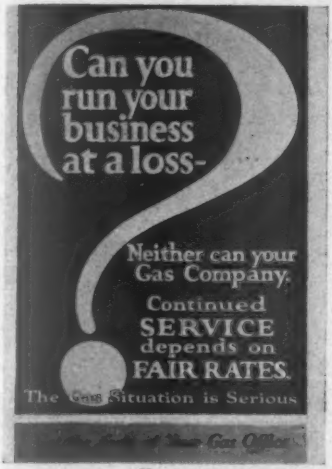
Orders Should be Forwarded to Association Headquarters at Once.

Service Letter No. 14 announcing the Interstate Commerce Commission's continuation of car assignments for transporting coal to public utilities was mailed to all Company Members on September 21.

In the September issue of *House Beautiful* appeared an interesting article, "Heating the House with Gas," contributed by Colin Mileur.

Say it with Posters!

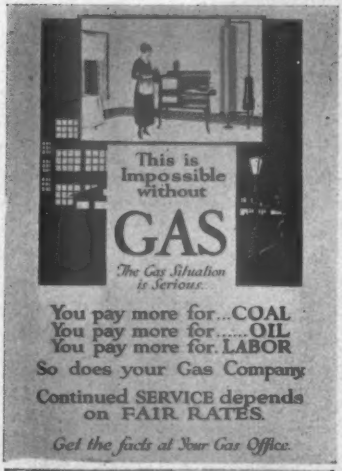
The posters and stickers should be ordered according to the numbers shown with the illustrations reproduced herewith.

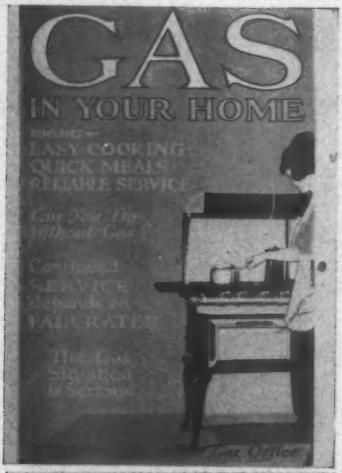

Can you run your business at a loss-
Neither can your Gas Company.
Continued SERVICE depends on FAIR RATES.
The Gas Situation is Serious

No. 1.

The reproduction of these designs in black and white does not begin to visualize the beauty and force of the finished posters.

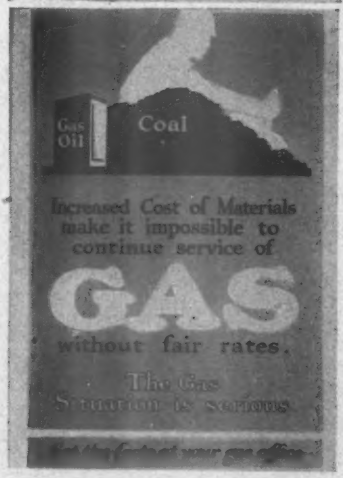
No. 2.

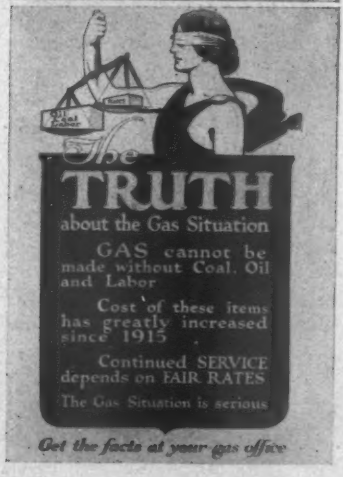

This is Impossible without
GAS
The Gas Situation is Serious.
You pay more for...COAL
You pay more for.....OIL
You pay more for. LABOR
So does your Gas Company.
Continued SERVICE depends on FAIR RATES.
Get the facts at Your Gas Office.



No. 3.

No. 4.




The
TRUTH
about the Gas Situation
GAS cannot be made without Coal, Oil and Labor
Cost of these items has greatly increased since 1915
Continued SERVICE depends on FAIR RATES
The Gas Situation is serious
Get the facts at your gas office

No. 5.

Committee on Public Service Securities; Investment Bankers Association of America

INTERIM REPORT NO. 10

Interim Report of Sub-Committee on Gas Securities, H. M. Addinsell, Chairman

Introduction

THE public utility gas companies during the past have enjoyed a growth parallel to other public service enterprises. The lack of visible or spectacular features in the industry, coupled with an apparent gradual decrease in use of gas for lighting, have given the impression that electricity is displacing gas in all uses and that its future function and growth is thereby greatly limited. The high prices of materials and labor that characterize the period since 1916, without the commensurate increase in rates, have reduced the net earnings of the gas companies and intensified the belief that the industry has only limited opportunity.

The fundamental causes of growth and expansion or solvency and permanency in any enterprise depend on the general use, utility and competitive value of the product it makes and the service it renders. A careful study of the status of the gas industry, its scope and its future, will demonstrate that basically it embodies all of the desirable features and that it must expand if the industries depending on heat are to obtain an economic fuel, or the homes to receive the advantage of an essential and most desirable form of service—heat at the turn of a valve.

The conservation of the fuel resources of the country depend in no small measure upon its correct utilization. Gas by its nature and mode of delivery makes possible the entire elimination of waste.

Magnitude

There are now in operation in the United States over 1,000 companies serving manufactured gas to between 45,000,000 and 50,000,000 people in some 4,600 communities. It is estimated that the total capitalization of all the public utility companies in this country is around $15,000,000,000 and it appears that of this amount something over one-fourth or approximately $4,000,000,000 is represented by the capitalization of artificial gas companies.

Development to Date

Due to the fact that electricity is now so largely used for lighting purposes, a fairly well established popular belief seems to have grown up to the effect that the gas business as a whole is declining. That this belief is unfounded is shown by the fact that the total amount of gas sold in the United States has increased from approximately 118,000,000,000 cubic feet in 1908 to more than 300,000,000,000 cubic feet in 1919, or an average annual increase of approximately 13 per cent., the rate of annual increase being greater during 1919 than any preceding year.

While it is true that the increase in the use of gas for lighting purposes has not kept pace with the increases in the use of gas for other purposes, nevertheless it is a fact that at the present time the total volume of gas used for lighting is much greater than it was in 1908.

Economic Advantages

The art of making coal gas has so far advanced that the heating value of coal can be more completely utilized and more efficiently applied through first reducing the coal to gas than in any other way.

The result is that in the future gas will be employed in constantly increasing degree in all processes requiring heat. Furthermore the many valuable products which may be obtained from coal are wasted when coal is used to produce heat in any other manner than by first extracting the gas contained.

Stability of the Gas Business

Gas is pre-eminent in the domestic cooking field for the reason that no other method of cooking combines the economy, cleanliness, and convenience of cooking by gas. There is no danger of a setback due to the elimination of gas from any given field of use as the effect of competition in the one field that gas was ever employed extensively and for which something else is better suited, *viz.*, lighting, has been fully discounted and any setback which the industry might have suffered due to the extensive use of gas for any given purpose being discontinued is already behind us.

Future Growth

The gas industry is undoubtedly on the eve of its greatest development, due to the fact that it is rapidly being employed in increasing quantities for all sorts of industrial purposes where heat is required, and the industrial heating field offers the same opportunity to the gas industry that was found by the electric industry in the industrial power field.

Industrial plants that use heat in their processes of manufacture must have a flexible fuel to conform with modern methods of production. Fuel oil has been used in the past; the present and future prices of this commodity, however, make its use uneconomical; and the only other fuel adaptable to the same processes is *gas*. To supply this demand, which incidentally *must* be supplied, will give the gas manufacturing industry an impetus comparable with that which the developments of the electric motor afforded the electric industry.

Competition

The impression that the use of gas is gradually being supplanted by the use of electricity is no doubt due to the fact that the advantages of electricity for lighting and incidental small uses in the home have been popularized largely through the means of publicity. The fact is that for heating requirements, which undoubtedly in the aggregate greatly exceed lighting and power requirements, gas is in no danger of being supplanted by electricity, as in the heating field gas is fully as clean and convenient as electricity and vastly more economical. The difference in economy in the use of gas and electricity for heating purposes is fundamental and is not due to any imperfections in electric heating appliances, which if 100 per cent. efficient from the standpoint of converting all of the electrical energy consumed into the form of heat, would still be less efficient than gas heating appliances from the standpoint of utilizing the available heating value in the original solid fuel. For certain small domestic heating and cooking purposes electricity is adapted, but the amount of gas which would be consumed in the aggregate if gas were used for these purposes instead of electricity is infinitesimal and may be disregarded. Electricity is further adapted for certain industrial heating purposes where extremely high temperatures can only be reached by the electric furnace, but in the vast majority of heating processes there is no question of competition between gas and electricity.

Regulation—Rates and Quality

The tendency of all public utility commissions to-day is to recognize that public utilities are entitled to the same rate of income as other lines of legitimate business. They are coming to realize that

the services rendered by the public utility companies are a public necessity and that such service can only continue to be rendered if a rate of return is allowed which will encourage capital to invest in public utilities and to develop their business. The gas industry suffered from the delay of the commissions in recognizing this necessity, and while full and adequate relief has not yet been universally accorded, the fact that the needs of the gas companies to increased rates are being recognized by the commissions fully as much as the needs of other public utilities is indicated by the fact that increases in rates have been granted to upwards of five hundred gas companies since the beginning of the war. Furthermore, the language used by many of the commissions in handing down recent decisions indicates the growing appreciation on the part of the commissions of the justice of the companies' position in asking for increased rates and is in contrast with the decidedly grudging manner in which most of the early increases were granted.

Need of Eliminating Arbitrary Standards

Due to the fact that gas was at first employed principally for illuminating purposes, it rather naturally developed that many regulatory bodies fixed arbitrary standards of illuminating value for gas. As gas became more generally employed for heating operations and as the open flame burner was succeeded by the mantle type of burner for illuminating purposes, the matter of the illuminating value of the gas itself became of no importance, and it followed that in some localities a standard of heating value was substituted for a standard of illuminating value. It is now important that all artificial standards be eliminated and that gas companies be encouraged to produce gas as cheaply per unit of heating value as possible, irrespective of the amount of heating value contained in a given quantity of gas. The idea of selling gas on a heat unit basis has been largely advocated and is at present being employed to a considerable extent in England, but it has not been conclusively proven as yet that this system is entirely fair. It is, however, clearly apparent that gas should be produced as economically as possible in order that the ultimate consumer may be given the greatest value possible for his money and the greatest economy in the production of gas can only be accomplished by eliminating both the artificial standard of illuminating value and reducing the artificial standard of heating value to the lowest point consistent with economical production and good service to the consumers.

Not Necessarily Dependent on Coal

It has been pointed out that probably the most important field for the future development of the gas business is that of serving industrial heating requirements, and in this field satisfactory service may be rendered by a practically non-luminous gas. It will therefore be possible in producing gas for this class of service to dispense with the use of oil to a very great extent, and in many cases entirely, where the cost of the gas per unit of heating value is increased by the use of oil.

—I. A. B. of A. Bulletin.

Wisconsin Commission Authorizes 520 B. t. u. Standard

The application made by our affiliated Society, the Wisconsin Gas Association, asking, on behalf of the gas companies in that state, for a reduction in the heating value standard, has resulted in an order, issued September 8, placing the standard at 520 B. t. u. minimum monthly average.

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

National Bureau of Standards (Advisory Committee)—O. H. FOGG, New York, N. Y.
Accident Prevention—JAMES B. DOUGLAS, Philadelphia, Pa.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
Chamber of Commerce, Membership in—CAPT. WM. B. MCKAY, Boston, Mass.
Calorific Standards—J. B KLUMPP, Philadelphia, Pa.
Central Development and Testing Laboratory—W. H. GARTLEY, Philadelphia, Pa.
Co-operation With Educational Institutions—C. A. MUNROE.
Educational—WALTON CLARK, Philadelphia, Pa.
Emergency Committee—P. H. GADSDEN.
Finance—E. H. ROSENQUEST, New York, N. Y.
Gas & Electric Service (National)—W. R. ADDICKS, New York City.
Gas Oil Committee—J. B, KLUMPP.
Gas Securities—RANDAL MORGAN, Philadelphia, Pa.
Funds for Gas & Electric Service—H. L. DOHERTY, New York, N. Y.
National Fire Protection Assn., Membership in—W. R ADDICKS, New York, N. Y.
Relations with Other Assns., etc. (Formation of Geographic and Company Sections)—L. R. DUTTON, Jenkintown, Pa.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
Standard Pipe Threads (International)—W. CULLEN MORRIS, New York, N. Y.
Taxation—P. H. GADSDEN, Philadelphia, Pa.

The Gas Industry's National Convention

THE annual conventions of our association are always looked forward to with a great deal of pleasure, and rightly so, because they combine the features of providing a common ground upon which to review the progress of the industry during the preceding twelve months, an opportunity to discuss and reach definite conclusions concerning the many perplexing problems of our business and they present, moreover, an occasion upon which to cultivate many personal and business friendships between men from all parts of the country.

The strength of an industry can usually be measured by how well its units are co-ordinated and working towards a common goal, and, as a general rule, the activity and the progressiveness of any national association representing a particular business are the gauges by which that business may be measured.

Those responsible for managing the affairs of the American Gas Association have well earned the thanks of an industry for the able manner in which they have met the many problems which have arisen within the past year. The gas business has been and still is face to face with the most critical condition in its history. It is in a new era, replete with many perplexing problems which require the best thought of those in our industry. The American Gas Association has a place, and an important one, in this new order of things; the coming convention in November will be the place where its record of accomplishment will be presented through various reports and papers. No gas company can afford to be without representation at the November meeting, when the live issues of the gas business will be considered.

A glance at the tentative program will indicate the many matters which are demanding the attention of our committees and the general organization. They represent the best thought of those who have investigated and studied the various accounting, advertising, commercial, technical and manufacturing problems of our business and in many cases there will be offered definite plans and recommendations, which, if followed out, will be of direct benefit to the business as a whole and particularly to those companies which put them into practice.

The policy this year of releasing for immediate publication in the gas journals and of distributing to the membership at large the various convention papers and reports as they come from the printer, will give every one an ample opportunity to study their contents and to offer the most helpful suggestions at the time they are presented. An attempt will be made this year to condense the convention meetings into three days instead of extending them from Tuesday to Friday.

The setting for the meetings, exhibition and other features is ideal. The management of the Hotel Pennsylvania has been more than generous in placing at the disposal of the association adequate space for all our needs. The exhibition this year will be held on the roof garden, where 112 spaces will be occupied for display purposes. One feature of this exhibit will be a composite model gas-lighting display, the fixtures and lighting units all contributed by the manufacturer members of the association. This display is intended to show the very latest developments in gas lighting, both from the standpoint of efficiency and from the artistic sense. If gas companies expect to retain their lighting business they must support the manufacturers who make the units they sell. Such support should be forthcoming this year in the shape of tangible and sufficient orders from the gas men to stimulate the manufacturer to greater effort. The exhibition offers opportunity to the gas man to compare and select the goods he will sell during the coming year. That is the reason the manufacturer exhibits. If you can use what he shows, place your orders as far as possible at convention time.

The topics covered by the speakers at the general sessions are both timely and

important. The address of Mr. Ransom on "The Utility Company in Court," is a case in point. Here is a subject which every gas company executive is keenly interested in, coming as it does at a time when so many companies have or are about to have rate cases pending. Mr. Ransom is an authority on the subject and what he has to say will be worth coming a long distance to hear.

Mr. Hagenah needs no introduction, particularly to our western members. His topic, "Post-War Tendencies of the Gas Industry," is indeed a live subject. The economic conditions are changing very rapidly these days and the gas industry must be ready to adapt itself to these changing conditions. Mr. Hagenah will have an important message to deliver. He has the facts and he knows how to present them.

Mr. Spillman is a speaker of national reputation and if his popularity with other associations before which he has appeared be any criterion, there is a treat in store for those who will be fortunate enough to hear him in November.

The entertainment features of the convention have not been overlooked and will consist of two functions, the President's reception and dance on Monday evening and the annual banquet and dance on Wednesday evening. These affairs will be held in the grand ball room of the hotel which is amply large to accommodate the largest attendance we could expect. The speakers selected for the banquet are men whom it will be a pleasure and inspiration to hear.

A golf tournament will be arranged, probably on Friday, all day, at the Glenn Ridge Country Club in New Jersey, and members who play should come with the expectation of spending an enjoyable day

on the links. The winter season in New York will be in full swing during November and the many forms of amusement offered in the city will provide entertainment for all tastes.

Hotel reservations are already coming in and those who have not attended to this matter as yet should do so at the earliest moment possible, writing direct to Mr. Taylor, assistant manager of the Hotel Pennsylvania, 7th Avenue and 32nd Street. The rates are as follows:

Rooms with single bed, for one (shower bath), $4.00.

Rooms with double bed and bath, for one, $5.00 and $6.00.

Rooms with double bed and bath, for two, $6.50, $7.00 and $8.00.

Rooms with twin beds and bath, for one or two, $7.00, $8.00, $9.00 and $10.00.

Parlor suites: $15.00 and up.

A most cordial invitation is extended to all members to attend and companies are urged to send as many men in their organizations and from each branch of the business as can be spared; and it is again suggested that those who are designated to attend be required to return with a full account of what they saw and heard and to pass the information along to those who had to remain at home but who are also interested in what goes on at the convention.

TENTATIVE PROGRAM.

General Sessions.

Main Ball Room, Mezzanine Floor.

Tuesday, November 16—Ten o'clock.

Meeting called to order and Opening Remarks.....Geo. B. Cortelyou, President
Report of Secretary-Manager.....O. H. Fogg, Secy.-Mgr.
Report of Treasurer.....Wm. H. Barthold
Address of the President.....Geo. B. Cortelyou
Report of Nominating Committee and Election of Officers.....C. H. Nettleton, Chmn.
Address—The Public Utility Company in Court.....Wm. L. Ransom, New York, N. Y.
Report of Committee on Time and Place, 1921 Convention.

Executive Session.

(Only Company Member Delegates Attending.)

Election of Company Members.
Election of Directors.
Election of 1921 Nominating Committee.
Election of Committee on Resolutions.

Wednesday, November 17—Ten o'clock.

Address—Adjusting Ourselves to a New Era in Business
Harry C. Spillman, New York, N. Y.
Report of Emergency Committee of the A. G. A.....P. H. Gadsden, Chmn.
Open Discussion.

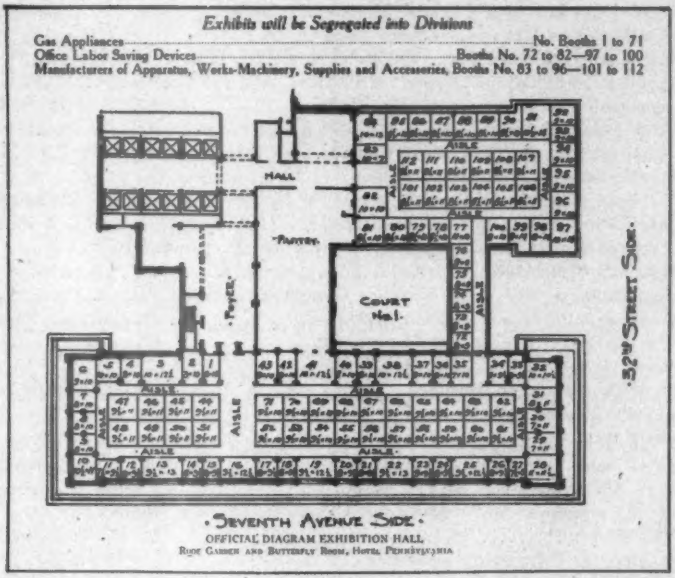
Thursday, November 18—Ten o'clock.

Address—Post-War Tendencies as Affecting Utilities....Wm. J. Hagenah, Chicago, Ill.
Reports of Chairmen of Sections.
Report of Committee on President's Address.
Open Discussion re. Association activities for the year 1921.
Closing Remarks.

Accounting Section.

Tuesday Afternoon, November 16—Two o'clock.

Address of Chairman.....A. P. Post
Report of Nominating Committee.....Chairman


Exhibits will be Segregated into Divisions
Gas Appliances ..... No. Booths 1 to 71
Office Labor Saving Devices ..... Booths No. 72 to 82—97 to 100
Manufacturers of Apparatus, Works-Machinery, Supplies and Accessories, Booths No. 83 to 96—101 to 112
HALL
PAINTER
POWER
COURT No. 1
AISLE
32nd STREET SIDE
SEVENTH AVENUE SIDE
OFFICIAL DIAGRAM EXHIBITION HALL
ROOF GARDEN AND BUTTERFLY ROOM, HOTEL PENNSYLVANIA

Report of Committee—State Representatives and Contributions to MONTHLY ..... J. W. Heins, Chmn.
Report of Committee on Standard Classification of Accounts for Gas Corporations ..... W. J. Meyers, Chmn.
Address—The Importance of the Accounting Department under Commission Regulation ..... Rufus C. Dawes

Wednesday Afternoon, November 17—Two o'clock.

Paper—Purchasing and Storeroom Accounting ..... L. H. Werner
Report of Committee on Merchandise Accounting ..... W. A. Sauer, Chmn.
Report of Committee on Automobile Cost Accounting ..... S. J. Palmer, Chmn.
Paper—Fire Insurance Practices of Utility Companies ..... J. G. Reese
Report of Committee on Office Labor-Saving Devices ..... J. L. Conover, Chmn.
Paper—Restoring Office Personnel of a Public Utility Company
Paul W. Herring, Chicago, Ill.

Thursday Afternoon, November 18—Two o'clock.

Report of Committee on Uniform Accounting Nomenclature ..... W. H. Pettes, Chmn.
Paper—Continuous Inventory of Fixed Capital ..... Ernest Johnston
Report of Committee on Job Order Systems ..... W. G. Sterrett, Chmn.
Report of Joint Committee on Trade Acceptances ..... L. F. Musil, Chmn.
Discussion of subjects to be considered by the Accounting Section in 1920-1921.

COMMERCIAL SECTION.

Tuesday, November 16—Two o'clock.

Address of Chairman ..... Charles A. Munroe
Report of Nominating Committee and Election of Officers ..... F. J. Rutledge, Chmn.
Report of Industrial Fuel Sales Committee ..... H. H. Clark, Chmn.
Presentation of the following short papers covering application of gas to particular uses:
The Use of Gas in the Newspaper Plants of Boston ..... W. W. Cummings
The Use of Gas in Railroad Shops ..... R. G. Monroe

The Use of Gas in Automobile and Tire Repair Shops.....H. L. Wolfe
The Application of Gas to Coal Fired Bake Ovens.....R. V. Howes
The Application of Gas to Core Baking.....A. A. Schuetz
The Application of Gas to Drying.....H. M. Crawford
The Application of Gas to Japanning.....W. J. Hampton
The Application of Gas to Galvanizing.....D. A. Flynn
The Application of Gas to Varnish Boiling.....Paul Dorchester
The Application of Gas to Brass Melting.....A. L. Palmer
The Application of Gas to Forging.....H. L. Doherty & Co.
The Application of Gas to Internal Heating.....J. F. Reynolds
The Application of Gas to the Making, Curing and Preparation of Meat and Fish Products.....W. T. Hudson
The Application of Gas in the Vitreous Enamel Industry.....Chas. C. Krausse
The Application of Gas to Asphalt Melting.....C. H. Kallstadt, Chicago, Ill.
The Use of Gas in Educational Institutions.....W. L. Powers
Discussion.
Report of Committee on Heating.....Geo. E. Bennitt, Chmn.

Wednesday, November 17—Two o'clock.

Report of Sales Development Committee.....Wm. Gould, Chmn.
Address—What Real Sales Service Means.....R. M. Searle, Rochester, N. Y.
Report of Committee on Filling in the Valleys in Gas and Appliance Sales.....Wm. Gould, Chmn.
Report of Sales Campaigns Committee.....H. J. Pettingill, Jr., Chmn.
Report of Committee on Compensation of Salesmen.....G. M. Karshner, Chmn.

Thursday, November 18—Two o'clock.

Address.....Roy F. Soule, A. C. Penn. Inc.
Report of Committee on Work Completion Schedules.....G. I. Vincent, Chmn.
Report of Committee on Maintenance.....Rollin Buckminster, Chmn.
Report of Committee on Gas Lighting.....T. H. Piser, Chmn.

MANUFACTURERS SECTION.

Monday, November 15—Ten-thirty o'clock.

Address of Chairman.....W. Griffin Gribbel
Report of Secretary.....W. W. Barnes
Report of Chairman—Membership Committee.....Wm. M. Crane
Report of Chairman—Nominating Committee.....Wm. M. Crane
Report of Chairman—Illustrated Lecture Committee.....Geo. S. Barrows
Report of Chairman—Division of Meter Manufacturers.....Donald McDonald
Report of Chairman—Division of Gas Range Manufacturers.....Wm. M. Crane
Report of Chairman—Division of Water Heater Manufacturers.....H. J. Long
Report of Chairman—Division of Office Labor-Saving Devices.....H. B. Lohmeyer
Report of Chairman—Division of Heating Appliance Manufacturers...Geo. S. Barrows
Report of Chairman—Division of Industrial Appliance Manufacturers..S. Tully Willson
Report of Chairman—Division of Lighting Appliance Manufacturers.....J. P. Conroy
Report of Temporary Chairman—Division of Apparatus and Works Manufacturers.....J. S. DeHart, Jr.
Report of Temporary Chairman—Division of Supply Manufacturers.....R. Kueller
Report of Temporary Chairman—Division of Accessories Manufacturers.....B. Ryan
Discussion—Future Activities.
Election of Officers.
Installation of Officers.
Adjournment.

PUBLICITY AND ADVERTISING SECTION.

(A single Session of this Section probably will be held in conjunction with an afternoon session of the Commercial Section.)

Address of Chairman.....George Williams
Paper—Good Will Advertising and What It Can Do..S. E. Mulholland, Fort Wayne, Ind.
Paper—Newspaper Publicity and Its Value to the Gas Company
J. P. Lucas, Charlotte, N. C.
Paper—How Gas Appliances Should Be Advertised.....J. P. Hanlan

TECHNICAL SECTION.

Tuesday Afternoon, November 16—Two o'clock.

Nominating Committee.....R. C. Congdon, Chmn.
Introductory Remarks by Chairman of Section.....L. R. Dutton
Presentation—Gas Oil Situation to Date.....W. H. Fulweiler
Testing, Handling and Minor Repairing of Dry Gas Meters.....W. A. Caster, Chmn.
Dust and Sulphur Deposits in Meters.....C. A. Morhous, Chmn.
Status of Cast Iron Pipe Standards.....W. A. Forstall, Chmn.
Mitigation Methods in Electrolysis.....Prof. L. A. Hazeltine, Chmn.

Wednesday Afternoon, November 17—Two o'clock.

Paper—Demand Limiting Meter.....H. D. Hancock
Purification Committee—Results to Date.....G. H. Stone, Chmn.
Paper—Condensing and Purification Problems of the Small Gas Plant.....A. I. Phillips and W. A. Dunkley
Gas Chemists Handbook—Revised Edition.....E. C. Uhlig, Chmn.
Refractory Materials—Particularly referring to Water Gas Generators.....W. H. Fulweiler, Chmn.
Standard Nomenclature for the Gas Industry—Progress to date...C. A. Norman, Chmn.

Thursday Afternoon, November 18—Two o'clock.

Developments in Carbonization Methods—Low Temperature Carbonization—Producers as Applied to Carbonizing Units....J. P. Haftenkamp, Chmn.
Paper—Coal Sulphur and its Conversion in the Gas Retort.....Dr. A. R. Powell
Waste Disposal Methods for Gas Plants.....L. J. Willien, Chmn.
Gas Works Auxiliaries.....C. N. Chubb, Chmn.
Description and Demonstration—Thomas Recording Gas Calorimeter....H. N. Packard

Helping the A. G. A. Correct Misrepresentation

ARMOUR & COMPANY, of Chicago, in a recent issue of their house organ makes the following appeal to their employees:

"Every employee of Armour & Company, wherever he or she may be located, reads the daily papers. Whenever you see anything of importance(not market reports) regarding the company or the packers, clip it out, mark the name of the publication and the date it appeared and send it to the Publicity Bureau, Chicago.

"'It is essential that an accurate check be kept of all public mention made of Armour & Company, so that if a misstatement is made it can be corrected. Do not consider a small item as too trivial, but send it along anyway. The cooperation of all employees in this manner will be invaluable in keeping the records complete and in aiding the work of building good will."

Press clippings are just as valuable to the A. G. A. as they are to Armour & Company. Have you sent in any clippings lately?

Accident Prevention Committee

Frequency, Severity and Costs of Accidents

FOR some time past, it has been realized by statisticians and others interested in accident prevention that the methods in use for presenting the great mass of accident data was not sufficiently flexible to permit an intelligent comparison to be made of the experience of different plants regarding accidents to employees while on duty.

The varying factors that enter into the study of accident statistics necessitated some basis or unit that would place different industries and plants on a common basis, so that a fair comparison could be made. It is evident that a plant or industry employing one thousand men will have a greater number of accidents in the course of a year than one, doing similar work, employing only one hundred men, but it has, as a rule, been found that the plant employing ten times as many men did not always have ten times as many accidents.

This is due to various causes, the principal one probably being that in larger plants each workman performs only one class of work with which he has become thoroughly familiar, while in smaller plants each workman may perform a variety of operations that will expose him to a greater hazard. In addition, the fact that the larger plants usually have a dispensary right on the ground is often responsible for men returning to work immediately instead of losing time to go to a hospital for treatment.

Variations in the number of accidents in a small plant will have a relatively heavier bearing on the figures than in the larger plant. One accident more or less out of a working force of one hundred will be offset only by a corresponding increase or decrease of ten accidents among the larger working force, which is not usually the case.

In the endeavor to arrive at a satisfactory unit, it was proposed to use an arbitrary unit of a 10 hour a day, 300 days a year worker. This unit was arrived at by dividing the total working hours of the plant under consideration by 3,000 and basing the accident frequency and severity rates on this unit. However, this unit did not prove satisfactory for the reason that it was arbitrary and being arbitrary, still left the figures open to doubt, especially in cases where it was attempted to make a comparison of plants operating under different lengths of working days and days per week. The unit placed too great a premium on the plant working long hours as opposed to the plant working shorter hours. Taking two plants with forces of the same size, and the same number of accidents occurring in each in a given period, the plant with the longer working hours would show a better experience as regards accidents to employees than the one working shorter hours, the comparison being made on the basis of the number of accidents to the number of 3,000 hour workers. This, on the face of things, did not appear reasonable, fatigue on the part of workmen working longer hours being recognized as a cause of accidents in some cases.

Acting on a suggestion made at a conference of statisticians in Switzerland last fall, the United States Bureau of Labor has recommended the adoption of a unit of 1,000,000 working hours for accident frequency and 1,000 working hours for accident severity. This solves

many difficulties and removes much of the doubt that existed concerning the value of accident statistics as previously suggested.

This unit is based on absolute figures and there is nothing of an arbitrary nature about it. The number of workmen does not enter into it in any way. The total hours worked, the number of accidents, and the total days lost are the only factors that enter into the frequency and severity rates. The unit is arrived at by dividing the millions of hours worked into the number of accidents to arrive at the number of accidents per million hours worked. The same divisor is used in determining the days lost per thousand working hours by moving the decimal point three places to the left.

The United Gas Improvement Company is using this system with the exception that instead of basing the accident frequency rate on 1,000,000 working hours it uses the 1,000 working hour basis all the way through, thus making comparison somewhat simpler and easier.

An analysis of the employee accident records of twenty-five gas companies in various parts of the country, during the six months ended June 30th, 1920, is interesting in showing the rates as regards frequency, severity and costs.

Number of plants reporting.....	25
Total hours worked, all employees..	4,594,770
Total cases losing time beyond shift, turn or day of accident.....	176
Total days lost due to accidents.....	1,444½
Accident frequency (Accidents per 1,000 working hours).....	.038
Accident severity (Days lost per 1,000 working hours).....	.314
(From the figures given above have been excluded six fatalities and one probable permanent disability case)	
Accident cost rate (Cost of accidents per 1,000 working hours)	
Including fatalities and one probable permanent disability	$7.42
Excluding the above.....	$1.107
Cost per case losing time, including above	$169.07
Cost per case losing time, excluding above	$28.91

Assuming an average wage of 50 cents per hour, the cost per thousand of payroll would amount to $14.84 or approximately 1½ per cent. of the payroll, including all cases of fatalities and permanent total disability in the totals. Excluding these, the costs would amount to $2.21 per thousand dollars of payroll, or a little over 0.2 per cent.

The figures for the costs include all payments made to June 30th, 1920, together with the estimated liability of cases open at that date but do not include the expense of operating the departments responsible for the settlements of claims and compensation awards.

Belting Don'ts

Don't attempt to stop a machine by grabbing the belt.

Don't throw, by hand, a belt with which you are familiar.

Don't lean the end of a ladder against a moving shaft; rest end on the stringer.

Don't place a ladder between two shafts to adjust a belt; place it on the outer side.

Don't put on a belt without stopping the machinery or at least reducing the speed one-half.

Don't, when splicing a belt, leave ragged ends or projections that might catch in someone's clothing.

Don't, when throwing off belts, allow two belts to occupy the same space between two pulleys on the driving shaft.

Don't try to release an overhead belt that is caught and begins to wind around the shaft; get away from it and have the power shut off immediately.

(Continued on page 618)

The Building Program As Affected By the Plight of Gas Companies

It is important that the facts contained in this article receive the widest circulation and it is therefore suggested that you—

FIRST—Supplement this article with information concerning your own situation, giving in detail your increased costs for coal, oil, labor and other essential material, together with your arguments as to the inadequacy of your present rates to meet increased costs and pay a fair return on your investment, and take it in person to your newspaper editors.

SECOND—Have this article printed in pamphlet form including the data suggested above and arrange for its distribution to every consumer and local organization in your territory.

THIRD—Arrange with your real estate brokers, builders, Board of Trade, Rotary Club, architects and other local associations to present these facts before these groups. The gas company manager or some prominent citizen should be delegated to this task.

FOURTH—Do it at Once—it is Vital to Your Interests.

WHAT are the building trades going to do about meeting the critical conditions confronting the artificial gas industry? There is an emergency situation generally throughout the gas business which will affect the building and housing program being given so much attention at the present time.

The present critical conditions are due to the shortage, and consequent unprecedented high prices of gas oil, coal and coke, and the fact that rate increases, where they have been obtained, have by no means kept pace with the ever-mounting costs of essential gas-making materials, including tremendous wage increases to all classes of labor.

The housing question also comes in for a share of consideration, inasmuch as in many sections the situation is reported to have reached the stage where the gas manufacturer and the builder are saying to each other: "What is the use of putting up new residence property if the gas company has not the money, and cannot get the money, for the necessary extensions of service, because of the present public attitude toward investing in public utility securities?" Lack of gas installation for cooking and heating, as well as lighting, will greatly affect the ready market value of property, either for rental or for sale.

With the credit of the gas industry impaired as it has been through failure to obtain adequate rate increases to meet production costs, the actual situation is that gas companies generally are unable to meet all the present demands on their service. This is especially true in various forms of industrial operation where gas is required in large volume for fuel purposes. If the manufacturing industries are unable to obtain a requisite amount of gas fuel to keep running, then the prosperity of the community is lessened, realty values decline, income of the municipality from taxes falls off, and every one suffers.

Another phase of the situation is that even if the manufacturer or the real estate operator does advance the money needed to cover the cost of new mains, the problem of increased capacity at the gas works has still to be solved. In many plants all over the country, the demand for gas far exceeds the manufacturing capacity.

Nor can the fact be overlooked that a large part of the construction program

opening up everywhere consists of the erection of houses along existing gas mains. In such cases, the gas company has no option but must take on all such additional consumers whether or not it is able to furnish such an increased service.

Speaking recently of the situation in the gas industry, as affecting the building trades generally, Mr. Philip H. Gadsden, Vice-President of The United Gas Improvement Company, of Philadelphia, and Chairman of the Emergency Committee of the American Gas Association, brought out these points:

"Once more the point forcefully is being emphasized that in the industrial world nothing is isolated. The entire complex system is bound by a chain of casual relations in such a way that when one industry suffers, be the cause what it may, the effect is felt directly or indirectly by all; when one prospers others also receive a proportionate impetus toward increased prosperity. There is so close and direct a connection between the gas industry and the tremendous construction program now just getting under way that every branch of the building trade must recognize this influence and should realize quickly and to the fullest extent its complete strength.

"Every contractor, every real estate operator, every builder, every architect—every man, in short, directly or indirectly supplying any material that goes into the construction of any building—should acquaint himself fully with the facts surrounding existing conditions in the gas industry. Every man in the building trades knows he pays an enormous and almost unprecedented increase for all essential materials, and accordingly fixes his selling price to meet this added production cost. But the gas manufacturer cannot do this. The economic law of supply and demand works only one way in his case. It tells him what he must pay for gas oil, coal, coke and labor, but the Public Utility Commissions fix the rate of return he may receive, regardless of increased cost, and establishes as well a standard of quality for his product.

"Oil has soared in price in the last five years from three to four cents a gallon to anywhere from twelve to sixteen cents; coal has shown a proportionate increase per ton, while labor and other essential material for an efficient gas service have increased proportionately. Increases in gas rates, where they have been granted at all, have been obtained only after long drawn out struggles before courts or state regulatory commissions, and after all have been in no sense proportionate to the greatly added cost of gas production.

"The result has been that reserve funds in the gas industry have been wiped out; that gas companies to-day are being called on as never before to meet increased demands for service; that their capacities are being strained every day, and they have no money for new equipment and main extensions to meet this added burden. With their reserves swept away and the majority of the companies operating at a loss, their credit has been so impaired that they cannot get new capital because they cannot, on the present rate basis, meet increased prices of material and insure a fair return to the investor.

"The present cost of installation for distribution only for one consumer, compared with that of 1914, furnishes an illuminating example of the troubles of the gas man. Six years ago this total cost for labor and material footed $90. To-day it averages $244, an increase in this one item alone of $154, or 171 per cent. Gas oil, coal and coke show average price increases of approximately 200 per cent.,

(*Continued on page 655*)

Canada's Gas Men Gather

AT the Annual Convention of the Canadian Gas Association which was held at Ottawa, the 27th and 28th of August, our own organization was represented by Secretary-Manager, Oscar Fogg, and W. Griffin Gribbel, chairman of the Manufacturers' Section.

In every sense of the word these two organizations of the gas industry are and should be, affiliated. We have the same problems, the same trials; the efforts of the one are the endeavors of the other; and any good fortune our Canadian fellows may enjoy is only a source of congratulation to us. Mr. Arthur Hewitt who served us so ably last October as toast master at the annual banquet, emphasized so frequently during that occasion that the very neighborliness and sympathetic ideals of our two Anglo-Saxon countries was reason enough for our walking hand in hand. And the fact that the necessities and the hopes of our common industry are identical only stresses the need we have for one another.

So, we are happy to know that the annual meeting over the line was a splendid success! Mr. McIntyre, retiring president of Canada's Association chose for the subject of his address the adoption of the 450 B. t. u. standard by the Canadian Government, which to the gas men of the provinces is a triumph, just as it would be to us, were we equally fortunate. Very fittingly he quoted from an address of Mr. Cortelyou, delivered last October to the members of our own organization, the words of which are all familiar to readers of the A. G. A. MONTHLY: "And if the Association can contribute substantially in effort and enthusiasm, in research and results to shaping the industry's progress in the American way of co-operation, with inducement to individual effort and initiative, in every office plant and workshop, it will deserve well of those in whose service it is engaged."

Officials elected for the ensuing year are:

Pres.—C. S. Bagg, Montreal.
V.-Pres.—E. H. Caughell, St. Thomas, Ont.
2d V.-Pres.—Col. D. R. Street, Ottawa, Ont.
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto.

Men Alone Buy Twenty Per Cent. of Gas Fixtures

Mrs. Christine Frederick says that women buy 48 per cent. of all drugs, 96 per cent. of all dry goods, 87 per cent. of raw and market foods, 48.5 per cent. of hardware and house furnishings.

"Indeed," says Mrs. Frederick, "a recent investigation showed that the only things men buy alone are 36 per cent. of the newspapers, 28 per cent. of the dogs, 24 per cent. of the phonographs, and 20 per cent. of the gas fixtures!"

(*Continued from page 615*)

Don't leave any tools on the stringers overhead after having tightened the clutch fingers or parts of a countershaft, as the vibration will cause them to fall.

Don't use a short pole when replacing an overhead belt upon a pulley that is in motion; use a pole nearly equal to the distance between the floor and the pulley.

—*Three Partners.*

ACCOUNTING SECTION

A. P. POST, Chairman — A. L. TOSSELL, Vice-Chairman

H. W. HARTMAN, Acting Secretary

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Merchandise Accounting—W. A. SAUER, Chicago, Ill.
Job Order Systems—W. G. STERRETT, Chester, Pa. Vice-Chairman, F. M. JAMES, Aurora, Ill.
Office Labor Saving Devices—J. L. CONOVER, Newark, N. J.
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Uniform Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.
Uniform Accounting Nomenclature—W. H. PETTES, Newark, N. J.

Effect of Depreciation Charges on Freight Rates under the Interstate Commerce Act

THE Consolidated Gas Company of New York recently filed with the Interstate Commerce Commission a petition for leave to intervene on behalf of itself and its affiliated companies in "Ex parte 74, In the Matter of the Application of Carriers in Official, Southern and Western Classification Territories for Authority to Increase Rates." The petition contains such an interesting discussion of the effect of "depreciation" charges in excess of actual and necessary disbursements for maintenance of efficient operation that we are reprinting a considerable portion of it. After citing certain portions of Section 15a, paragraphs 1, 2 and 3, and Section 20, paragraph 5 of the Interstate Commerce Act relating to "depreciation" charges, rate of annual return and the Interstate Commerce Commission's powers of regulation relating thereto, the petition states:

"In order to determine what amounts may properly be charged to operating expenses to represent 'depreciation' it is necessary to bear in mind the proper purpose of such charges. The word 'depreciation,' as commonly used, has a variety of meanings. One of the most common is to denote a shrinkage in value, but that is apparently not the meaning intended by Congress to be attached to the word as it is used in the Interstate Commerce Act, because changes in value are matters of fact to be determined by observation and not by rule prescribed by the Commission. The railway property of a carrier is held for use and not for sale; and fluctuations in its value, if they occur, do not have any relation to the carrier's operating expenses. A merchant may properly reserve out of his revenues sums to provide against shrinkage in value of unsold goods below their cost, for, until the complete stock of goods is sold and converted into money, the real profit or loss from his venture cannot be ascertained, but the carrier by railway expects his plant to be operated forever for railway purposes or at least for an indefinitely long period. It is composed almost entirely of

tangible property that cannot readily, and usually cannot economically, be converted to other uses. Its ownership may change and the price at which the transfer is effected may be greater or less than the cost of the plant when installed, but it does not appear that the utility of the plant or its relation to the community using it is thereby affected. In its public aspects the essential thing is that the plant be maintained in efficient operating condition and that its service be rendered efficiently and economically and at a fair price. Its operating expenses are the out-goes necessary to such efficiency and economy of operation, and the statute has declared that the fair price for the service rendered shall be so determined, as nearly as may be, as to yield, in addition to such necessary outgoes, a further sum which shall be, for the carriers as a whole, in a given rate district, 'a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation.'

"It is a matter of common knowledge that in any extensive or complicated plant or instrumentality, the thing does not wear out or give way as a whole. Some part wears or weakens to the point that it ceases to operate satisfactorily, and upon being repaired or replaced, the whole continues to operate satisfactorily. These repairs and replacements become necessary only at irregular intervals, but in an extensive and heterogeneous plant or railway system subjected to a variety of hazards, they tend to equalize themselves from year to year, and the tendency is still more marked if longer periods be compared.

"The statute does not indicate how frequently the Commission shall revise and adjust the general level of rates for the carriers of a particular rate district, but presumably such readjustments will be made only at intervals of several years. It takes an appreciable period of time for traffic to adjust itself to a new level of rates and such level ought not to be disturbed until it becomes clear that it is inadequate or excessive. If the intervals between readjustments of rate levels are long enough to permit the law of averages to operate with respect to repairs and renewals and replacements of plant, it is apparent that there is no occasion for the introduction of any estimated charges into operating expenses, to secure a fair statement of cost of operation for the period. If the intervals are too short for this, the justification for the admission of charges based on estimates becomes more evident. Such estimates, however, when permissible, should be restricted to elements other than anticipated shrinkage in value of parts of the plant, for, as has been said above, the carrier is not a trader or merchandiser in respect of its railway property and its duty in connection with its property is to maintain the same in efficient operating condition and to operate it efficiently and economically in the transportation of goods and persons. When any part wears to such a point that any particular item no longer operates efficiently, it is the carrier's duty to repair it or replace it, and thereby to overcome the *actual* deterioration of the item of property and restore it to full operating efficiency. If in the interval since it was installed the art of transportation has progressed to such a point that the thing to be replaced has become obsolete or obsolescent or is inadequate, it should be replaced with one of improved type and adequate capacity, and at such time the fixed capital account should be adjusted to conform to the change in investment. 'Abandonments occasioned by changes of this character are therefore chargeable to future earnings.' (Kansas City So. Ry. v. U. S., 231 U. S. 422, 451-452.)

"It thus appears that 'depreciation' charges in operating expenses should be restricted to those necessary to equalize from year to year the charges for extraordinary repairs and for renewals and replacements that occur irregularly. As experience shows that in large plants distributed sufficiently widely to be subjected to a variety of hazard the actual costs tend to equalize themselves when taken over a period of years, it is apparent that there is no need for permitting the introduction of estimated charges in operating expenses to cover the matter of 'depreciation' in connection with the determination of a fair level of rates as defined in the statute, unless the Commission contemplates frequent readjustments of the rate level. If such frequent readjustments are contemplated, the regulation of such charges should be based on the past experience of the carriers, and the charges themselves should be proportioned on the basis of work done rather than on mere lapse of time. Extensive reconstruction projects involving numerous renewals and replacements cannot advisably be undertaken when the plant is working under full load or overload, for at such times operation would be too much impeded by the execution of any maintenance

work in excess of actual immediate needs. Furthermore, at such times prices are usually high and the supply of materials and labor restricted, and it would be uneconomical to do work of this character that is not absolutely essential to the continuity of operation. In such periods, therefore, when the actual disbursement for maintenance work is comparatively small, the estimated charges may properly, if ever, be introduced in operating expenses to make provision for the time when traffic has slackened and the forces of the carrier can advantageously be concentrated on maintenance work. . . ."

The company petitions:

"That the Commission will find that for Class 1 carriers there are no 'classes of property for which depreciation charges may properly be included under operating expenses,' and that it will require that the maintenance charges for any calendar year, including charges for renewals and replacements, be stated on the basis of expenses actually incurred during that year, to the end that freight rates be placed at a level which will be fair both to carriers and to shippers, and that they be not made unduly high in order to provide for estimated charges not based on actual facts.

"In the event that the Commission be of opinion that a year is not a sufficiently long period to include representative fluctuations in maintenance charges, the petitioner prays that the rules governing estimated charges for 'depreciation' shall hereafter be based on the actual experience of the carriers during a period of a length reasonably sufficient to include such fluctuations and that the estimated charge shall be distributed from year to year upon a suitable operating unit (such as, for example, car-miles), so that during years of heavy traffic the estimated charge may be correspondingly great and during years of light traffic it may be correspondingly less, and thus avoid, so far as may be, fictitious fluctuations in the 'net railway operating income' which the statute makes the test of the adequacy or inadequacy of a given schedule or level of rates."

Balopticon Machine Available for Use in October

THE Balopticon machine which was recently purchased by the A. G. A. for the use of member companies on a rental basis of $15 a week plus delivery charges from New York to point of destination and return, has been in constant use since August 3rd. It has proved to be a popular publicity feature at Schenectady, N. Y., where the Adirondack Power and Light Corporation used it for a week, and at Nashua, N. H., where the Manchester Traction, Light and Power Company used it for two weeks.

The machine at this writing is in possession of the Wilmington Gas Company, at Wilmington, Del., and after it serves two weeks there it will go to Philadelphia where it will be used September 14 to 18 in the booth of the American Gas Association at the exhibition of the American Steel Treaters Society. Following this it will be used for one week each by the Cohoes Power and Light Corporation, at Cohoes, N. Y., and the Plymouth Gas Light Company, at Plymouth, Mass.

After October 10th, allowing ample time for delays in shipments to the companies mentioned above, the machine will be available for use by other company members of the association who may desire to take advantage of this effective method of presenting their story to the public.

A full description of the machine and slides accompanying it appeared in the September issue of this magazine. Other slides covering a wide variety of subjects may be made locally by the companies using the machine and added to the original set or they may be presented separately, as desired.

Modern Journals for Corporation Accounting, Article IV

By EMIL ULBRICHT

THE summary or distribution of the charges incurred by large companies affecting the many different accounts brings about the necessity of emphasizing the importance of the proper classification in order to properly present financial information which will enable the executive to accurately know results. To do this some means of assembling this information must be adopted so as to promote efficiency and at the same time present with due uniformity the financial obligations incurred.

There are hundreds of systems which may be used to accomplish the desired result, each one specifically prepared and adapted for some particular branch of business, but no two alike except in principle. In introducing a system whose value has been fully demonstrated and proven adaptable and capable of expansion, it is being done with the assurance and confidence that it can very easily replace any one which may be in use.

Two forms are necessary in addition to the schedule, both of which are shown in Fig. N, the one in the upper left-hand corner of the illustration being known as the Invoice Register and the other, the Classification Book. The pages of the Invoice Register are numbered consecutively, each month beginning a new series. Each line bears a number, the front page being numbered from 1 to 50 and the back of the sheet, 51 to 100. When the invoice is recorded it is given a number corresponding to the page and line upon which it is entered. The invoice may have charges to several accounts but only the total is entered in the Register, the distribution of the charges being made in the Classification Book.

For each accounting period new sheets are prepared for the Classification Book by entering the account number at the top of the page and using the space at the head of each column for the name of the district, office or whatever subdivision it may be desired to separate the costs. At the end of the period, or at balancing time, the columns are footed and the totals of the accounts must correspond with the total of the invoices entered in the Register.

As explained for other schedules the detail of Operating Revenues and Operating Revenue Deductions is also posted direct to the Ledger Accounts and only the grand total of this group used in the schedule. The first sheet of the latter is illustrated in Fig. O, and can be used to record an entire year's transactions. The first sheet is used for the summary of the Indicant Accounts, representing the postings to the General Ledger. The remainder of the sheets, forming part of the schedule, are used for the detail accounts, excluding, as has been previously stated, the Operating Revenues and Operating Revenue Deductions. Blank forms are used and the accounts typewritten thereon prior to the beginning of each fiscal year.

Many corporations prefer to charge direct to an expense account the obligations incurred in the handling of the storeroom, the stable and the automobile. Others prefer to spread this overhead to the accounts benefited as a result of the issuance of material from storeroom or on the basis of the hours employed in the operations of the stable or automobiles.

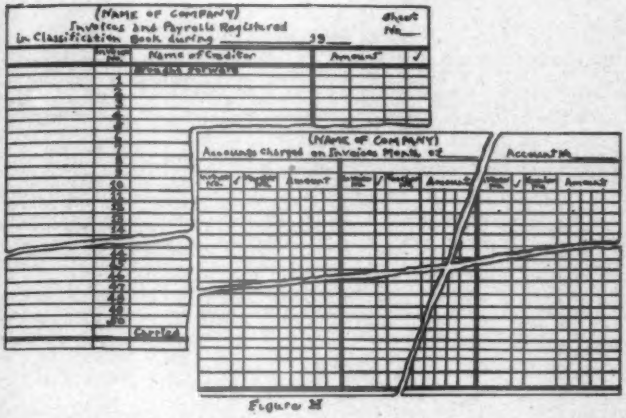

Figure M

In accumulating the items applicable to the operation of any of these departments the charges are made to a suspense account and when the total for any accounting period becomes known, the costs so ascertained are apportioned in a manner which is to be hereinafter described.

The basis for the apportionment of storeroom expenses are the accounts to which the general and commercial stores material have been issued during an accounting period. Provision should be made on the Report of Issues from Storeroom for the apportionment of Storeroom Expense based upon the relative value which the issues to the various accounts bears to the grand total of issues to all accounts, excluding, however, all items less than $5.00 inasmuch as these amounts are so small as to be negligible in the calculation.

When the amounts as apportioned become known, the schedule illustrated in Fig. P is used as the medium of posting to the detail and general ledgers, the detail of Operating Revenues and Operating Revenue Deductions being handled in the same manner as described on page 488 of Article II.

At the end of the accounting period each superintendent is required to send to the general office reports for the various stables located in his district, setting forth on each report a consolidated statement of the number of hours the teams were employed during the period, these amounts being supported by such detail as will show the hours applicable to the various accounts benefited. When the cost of operating any stable has been determined, the amount is then apportioned on the basis of the relation between the hours alloted to each account and the grand total.

The assignees of the various automobiles are also required to submit to the general office reports showing the use of the automobiles during the accounting period. When the cost of operating any car becomes known it is also apportioned

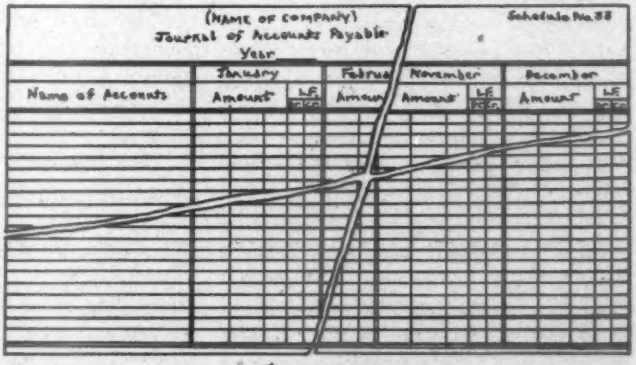

Figure O

on the same basis as the cost of operating the stable. No schedule illustrating the posting medium for either Stable or Automobile Expenses has been deemed necessary in this article since the principle involved is similar to that of Storeroom Expenses and the one illustrated in Fig. P, with some slight modifications, could be used for either. Since costs for operating automobiles are accumulated so as to show the cost of each car, it remains to be seen that the schedule should be arranged to show car numbers instead of district names.

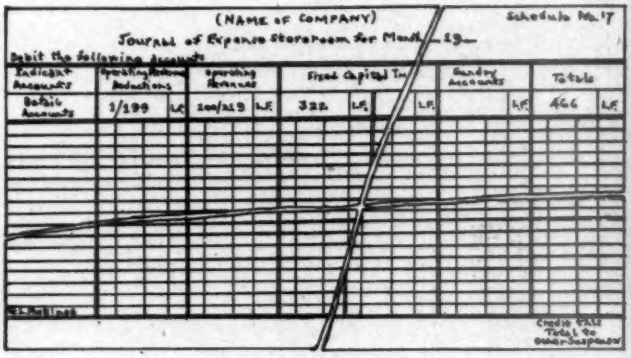

Figure P

In all transactions where human element is a factor errors are bound to occur and so it becomes necessary when correcting such mistakes, journal entries are brought into use. Errors which are discovered in the current accounting period may sometimes be corrected without the use of an entry but when the discovery is made after the close of the books, there is no alternative. The reader can easily understand the amount of work involved in journalizing correcting entries when several hundred are made. If a means whereby much time is saved through summarizing the debits and credits, reducing the posting in many cases to an account to one amount, then that system is worthy of special consideration.

Vouchers for journal entry are prepared for each transaction with sufficient information thereon to fully comprehend its significance. The vouchers are dated to correspond with the month of entry and are numbered consecutively, a new series beginning with each accounting period. After they have served their purpose they are filed in a suitable binder.

The schedule illustrated by Fig. I and shown in Article II on page 489 is the medium for posting the transactions. The schedule is headed "Journal of Correcting Entries" and the proper number affixed. The columns are headed as outlined in the paragraph on Miscellaneous Charges and the same instructions followed. The only exception, however, in the entries is the fact that the voucher numbers are placed in the space provided for the numbers of the Auditor's Charges. The schedule is in balance when the sum of the debits equals the sum of the credits.

Frequently material is transferred from one district to another, or from the jurisdiction of one person to another and involving the revision of accounting records. To take care of the situation, Interchange Bills are prepared in triplicate, the original is sent to the consignee of the material, the duplicate is forwarded to the General Office with the name of the account to be credited and the triplicate is retained by the consignor. The consignee holds the original Interchange Bill until the material is received and upon its receipt approves and classifies it, sending it then to the General

(*Continued on page 656*)

ADVERTISING SECTION

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GOULD, WM., Boston, Mass.
GRIBBEL, W. G., Philadelphia, Pa.
HANLAN, JAMES P., Newark, N. J.
MCDONALD, DONALD, New York, N. Y.
MULLANEY, B. J., Chicago, Ill.
ROBBINS, M. C., New York, N. Y.
ROPER, GEO. D., Rockford, Ill.
RUTLEDGE, F. J., Philadelphia, Pa.
WILLIAMS, GEORGE, New York, N. Y.

Representing Affiliated Societies

ALLEN, GEO. W., Toronto, Can. (Canadian)
CARRAWAY, LEAKE, Norfolk, Va. (Southern)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
FUGATE, FRANK, Detroit, Mich. (Michigan)
HIGGINS, A. A., Providence, R. I. (New England)
JASPERSON, R. O., Chicago, Ill. (Wisconsin)
LESTER, F. M., Chicago, Ill. (Illinois)
MANTLE, G. D., Oakland, Cal. (Pacific Coast)
MARTIN, E. H., Des Moines, Ia. (Iowa District
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
ROLSTON, R. J., Philadelphia, Pa. (Pennsylvania)

Publicity the Only Wise Policy

THOMAS N. McCARTER, president of the Public Service Corporation of New Jersey, believes that the policy of going to the public with the facts is the basis of any endeavor to readjust the relations between communities and their utilities. In the August issue of *Aera*, the publication of the American Electric Railway Association, he contributes an article, part of which reads as follows:

"Those of us entrusted with the care of the property of many thousands of investors have met and are meeting with many discouragements in our efforts to accomplish the rehabilitation of the industry. We have seen the apparent failure of many carefully thought out and carefully planned publicity campaigns. We are confronted everywhere with a lack of understanding of the real issues on the part of the public and real indifference or worse on the part of the representatives of the public. Under these circumstances, it is but natural that many of us should become pessimistic as to the possibility of securing public cooperation and doubtful as to the possibility of ever bringing that public to a true realization of the truth of the situation.

"Yet there is no other course left to us than to continue and increase our efforts. Public opinion is to a larger extent than most of us realize, in control of our destinies. There are a thousand adverse forces working against us in the formation of this public opinion. If we permit our cause to go undefended, if we fail to combat the influences that are constantly active in their efforts to destroy us, we are giving up a fight which it is our duty to wage to the last ditch, not only in the interest of our shareholders, but in the interest of our country, which is in this period of after-war readjustment threatened with those currents of radicalism that have never yet accomplished anything but destruction."

If you have a dollar and I have a dollar and we swap, neither one is any better off. But if you have an idea and I have an idea and we swap, then both of us have two ideas. That is the true spirit in advertising. You cannot enter into it without striking brand new sparks from the flint and steel of give and take.

An Ultimatum Delivered to Notoriety Seekers

POLITICIANS seeking notoriety and position by reckless attacks upon public utility companies are receiving no sympathy at the hands of the Washington Public Service Commission. In a decision in the case of City of Wenatchee v. Central Washington Gas Company (P. U. R. 1920 C, p. 871) the Commission says in part:

"It is evident that this utility is staring bankruptcy in the face. The people of Wenatchee do not expect the Commission to pursue a course that will compel this plant to be junked and sold.

"We cannot resist observing at this time that the people of that community, in all matters which have come before the Commission, have exhibited a most broad-minded, unselfish attitude toward their utility problems. Wenatchee appears to be happily free from that type of demagogue that seeks notoriety and position by picturing all public service companies as dragons seeking to devour the people whom he loves, and himself as the mailed knight, impatient to sally forth single-handed and pull the teeth of the monsters amid the blare of trumpets and plaudits of the multitude. Nor do we believe that the people of Wenatchee are of the type to be hoodwinked by that character of burlesque.

"We realize that it is not a popular thing to increase rates. It would be easy to deny such applications and pose dramatically as friends of the people, standing between them and corporate greed. We occupy a position of great responsibility. We have it in our power to bring ruin and disaster to many hundreds of utilities and rend the financial fabric of the State. It is very difficult now to secure capital for public service enterprise, and this Commission, by a rash stroke of the pen, could make it impossible in the State of Washington. We have endeavored in these trying times to save legitimate investment in utility properties from ruin, preserve the necessary public service to the people, and, at the same time, be just and fair to the patrons who pay the price. If we should yield to the clamor of politicians, whose stock in trade is reckless denunciation of public utilities and abuse of the Commission for permitting them to live, the results would frighten even those irresponsible agitators."

Statement to Gas Consumers

The CHAMBER OF COMMERCE of Gloversville have investigated the proposed gas rates of Fulton County Gas and Electric Company which become effective September 1st, 1920. The report of the Chamber of Commerce states:

"Under the proposed service charge your committee believes that every consumer of gas pays his equalized costs of the service and neither the small consumer nor the large consumer is compelled to carry a load that should be shared by both."

* * * *

"After an analysis of figures of the Company we can see no grounds to recommend opposition to the proposed manner of increasing consumer gas costs and after careful study believe that the proposed service charge to be more equitable to all consumers."

Fulton County Gas & Electric Co.

When the Chamber of Commerce of Gloverville, N. Y., found the service charge to be equitable, the Fulton County Gas and Electric Co. told its consumers about it the following day.

"BLOWING OUT THE GAS"

"SHE CAN'T MARRY BOTH"

"SPARE THE CHILD"

These Features

are supplied

Without Charge

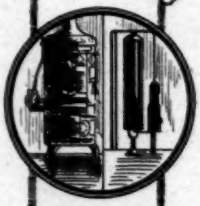
by

Information Bureau Emergency Committee A. G. A.

Pennsylvania Hotel

NEW YORK CITY

To Our Customers –



Get the most for your money out of the gas you use. Make your gas bills thrift bills.

We help you to do this when we aid you in choosing the most economical gas appliances and tell you how to avoid waste by using them intelligently.

Waste of gas means big bills, complaints, investigations, re-checking, letter writing, delayed payments and other expenses; and worst of all, it means dissatisfied customers.

Satisfied customers are worth more to us than any revenue derived from gas which is wasted.

We want no money we do not earn.

(Insert name of your Company here)

MEMBER OF THE AMERICAN GAS ASSOCIATION

Seventh of a series of twelve "good will" advertisements now being prepared for member companies. Price of series complete with matrices in three or four-column newspaper width, $36.00. Price of three-column electrotypes, $48.00. Orders for single advertisements also will be accepted at $3.00 per matrix and $4.00 per electrotype.

To secure prompt delivery of a single advertisement or the series, your order should be sent in immediately.

COMMERCIAL SECTION

C. A. MUNROE, Chairman — LOUIS STOTZ, Secretary — J. P. HANLAN, Vice-Chairman

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BENNITT, GEO. E., New York, N. Y.
BOND, C. O., Philadelphia, Pa.
BUCKMINSTER, ROLLIN, Pawtucket, R. I.
BURNS, J. J., St. Louis, Mo.
CHRISTMAN, H. S., Philadelphia, Pa.
CLARK, H. H., Chicago, Ill.
CLARK, W. J., Mt. Vernon, N. Y.
DAVIES, J. E., Chicago, Ill.
DODSON, H. K., Baltimore, Md.
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ELSMAN, RALPH, Brooklyn, N. Y.
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JASPERSON, R. O., Chicago, Ill.
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PISER, THEO. H., Boston, Mass.
POST, A. P., Philadelphia, Pa.
RASCH, W. T., New York, N. Y.
STANNARD, CLARE N., Denver, Colo.
TRUMBULL, G. R., New York, N. Y.
VINCENT, G. I., Syracuse, N. Y.
WRIGHTINGTON, E. N., Boston, Mass.

Representing Affiliated Societies

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BORDEN, A. W., Hastings, Nebr. (Iowa Dist.)
BOWLIN, M. A., Jacksonville, Fla. (Southern)
BRANDES, JEROME, Chester, Pa. (Pennsylvania)
BURKE, E. J., Indianapolis Ind (Indiana)
CHAMBERLAIN, G. R., Grand Rapids, Mich. (Michigan)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
FLAUT, J. J., New Orleans, La. (South Central)
HANLAN, J. P., Newark, N. J. (New Jersey)
MCINTYRE, W. H., Ont., Can. (Canada)
ST. JOHN, JOHN, Madison, Wisc. (Wisconsin)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Sales Development—WM. GOULD, Boston, Mass.
Compensation (Sub)—G. M. KARSHNER, New York, N. Y.
Filling in the Valleys in Gas and Appliance Sales (Sub)—WM. GOULD, Boston, Mass.
Maintenance (Sub)—ROLLIN BUCKMINISTER, Pawtucket, R. I.
Putting Non-Profitable Consumers on a Profitable Basis (Sub)—B. H. JARDINE, Knoxville, Tenn.
Sales Campaigns (Sub)—H. J. PETTENGILL, Jr., Woonsocket, R. I.
Work Schedule (Sub)—G. I. VINCENT, Syracuse, N. Y.
Gas Lighting THEO. H. PISER, Boston, Mass.
Heating—GEO. E. BENNITT, New York, N. Y.
Industrial Fuel Sales—H. H. CLARK, Chicago, Ill.
Furnace Performance Standards (Sub)—I. LUNDGAARD, Rochester, N. Y.
Improvement of Atmospheric Burners (Sub)—JEROME BRANDES, Chester, Pa.
Proportional Mixing (Sub)—CHAS. C. KRAUSSE, Baltimore, Md.
Recuperation and Regeneration (Sub)—H. O. LOEBELL, New York, N. Y.

The Benefit in Exchange of Sales Plans

ONE of the duties of our Sales Campaign Committee is to furnish, for publication in the AMERICAN GAS ASSOCIATION MONTHLY, articles describing successful sales activities.

There can be no question but that the managers and sales managers will derive a benefit from having first hand information as to how other companies are successfully merchandizing appliances. We can all benefit from the successful experience of others. In the past there has been a rather reluctant attitude on the part of sales managers to tell others in the industry what they are doing, with the result that practically every sales manager plans his sales campaigns regardless of the fact that he could profit immensely were he to have before him details of what other companies have done successfully.

Is it not time that we all agreed to exchange one with the other our sales plans? If we are agreed that this is the right thing to do then let every sales manager agree, from this time on, to send to Association headquarters full details of all his sales campaigns, including copies of his advertising and a statement of results secured.

The best evidence of what may be accomplished when the units of an industry work in co-operation with one another and with a central agency is seen in the efforts of the Emergency Committee of the A. G. A. which has already secured more publicity for the gas industry and brought about a better understanding of the industry's need for relief than anything ever attempted by the gas business.

In this issue will be found an article describing how Baltimore conducted a "one day sale" and disposed of 163 rebuilt gas ranges. Sales managers in every gas company are looking for successful plans and you might have just the plan they are looking for. Tell us what you are doing to increase your merchandizing business.

Exchange of Sales Plans will stimulate the merchandizing end of the gas business and place it where it should be—on a parity with other branches of the business and as a leader in the community. It can be done. What do you say? Let's go.

Gas Lighting Should Not Be Neglected

A CONFERENCE attended by Messrs. J. P. Hanlon, W. W. Barnes, John Doyle, Dr. Howard Lyons, J. R. Stetser, B. A. Duvall, William Morris, Philmer Eves and Louis Stotz was held at association headquarters on July 28 to discuss various matters relative to the gas lighting situation. The following opinions and recommendations have been submitted to the Gas Lighting Committee as representing the collective thought of the meeting.

To secure gas-lighting business it is first necessary to have new buildings adequately piped during course of construction. Unless the sales representative has an incentive in the nature of attractive remuneration, such as a bonus or special commission for every house he gets piped, the business will not be secured in any quantity.

Attractive, up-to-date and high class fixtures comparable to those offered by the electrical interests must be available and exploited. It was recommended that the fixture manufacturers be encouraged to display at the annual meeting in November types of gas fixtures which will attract the business, and gas men be urged to place orders with the manufacturers whose fixtures are of a quality to merit being pushed by gas companies.

It was suggested that companies might find it advisable to pool their purchases and give their orders to exhibiting manufacturers at the time of the exhibition, thus showing in a tangible manner a desire to encourage the manufacturers who will make suitable gas fixtures.

Without suitable maintenance, the gas-lighting business will never progress to any extent and it is therefore necessary for companies to work out maintenance systems to meet their conditions and give the service.

It was recommended that all gas companies maintain a close and friendly relationship with all the architects and building contractors in their community.

Mr. Eves outlined the methods adopted in New Haven, where they have established an ideal co-operation with the architects and are securing a large volume of profitable gas-lighting business.

All the members present concurred in the opinion that the use of gas for lighting had an advertising value which should not be overlooked.

A Special One Day Gas Range Campaign

B. A. DUVALL, Baltimore, Md., Member of Sales Campaign Committee

THIS was a somewhat unusual sale conducted by the Merchandise and Domestic Sales Department of the Consolidated Gas, Electric Light and Power Company, of Baltimore, Md., on Monday, August 16. It was a sale of rebuilt Oriole gas ranges and that the sale was a tremendous success is stating it mildly. What results were obtained may be noted from the following facts:

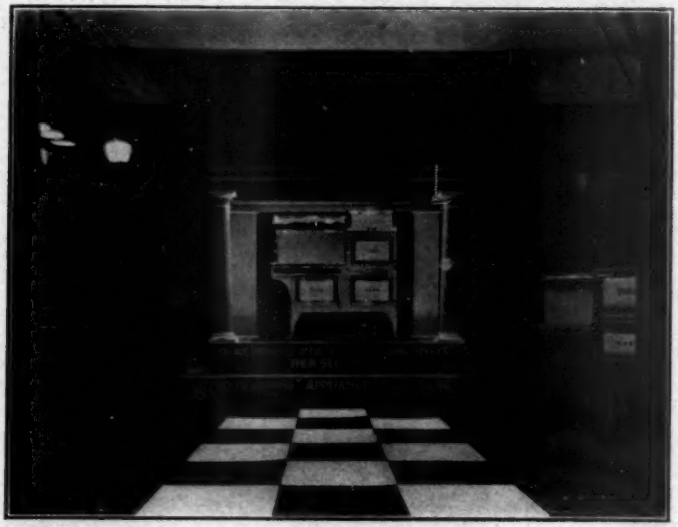
The sale opened at 8.30 in the morning and every range was sold before 12 o'clock! A total of 163 rebuilt ranges were offered in the sale. They were placed on the sales floor and immediately the public bought them as fast as the augmented sales force could make out the sales tickets. During the first hour and one-half of the sale 108 ranges were sold. During the first two hours and one-half 132 ranges were sold and shortly before 12 o'clock word was sent through the sales force that every range had been sold. Specifically speaking, one range was sold every 55 seconds during the first hour and a half of the sale!

A word about the selling plan for the sale. The sales people were first informed of the event the day before the sale. They were addressed by supervisors of the departments who outlined the selling plan, spoke of the ranges themselves and instilled the department with enthusiasm that not a rebuilt range should remain to be sold when the time came on Monday night to "ring out." The outside representatives were also included in the selling plan—these salespeople to telephone in their orders. Immediately the sales force caught the spirit of the occasion and they were "sold" on the plan without a moment's hesitation.

With the sales people thoroughly in accord with the goal to be obtained, the next step was the arranging of the merchandise on the sales floor, placing all of the 163 ranges on display. This required considerable re-arranging of the stock already on display but when the rebuilt ranges were in place the stock was arranged attractively and conveniently for quick selection. Next came the advertisement to acquaint the public with the opportunity to save money in buying a guaranteed rebuilt gas range.

The publicity was confined to two full-page advertisements, a page in each of two Sunday newspapers. The head-line read, "163 Rebuilt Gas Ranges at Savings of From $19.20 to $23.55 Under Present Prices." Next followed a short description of the ranges, the object of the sale and the selling plan—"be early and tag your range." Next followed another large display line—"Every Range Guaranteed—Only 163 Ranges to be sold —First Come, First Served—Be Early." Six ranges were illustrated, three ranges on either side of the display. Beneath each range was the selling price, the number of this particular style to be sold and the saving under the present price. The display was kept extremely simple—strength, conciseness and brevity being the display points given prominence. As soon as the store was opened on Monday morning this advertisement was placed in the advertisement display frames on the floor, the sales people were given a copy and a few were allowed to find a resting place on the counters.

As soon as the store was opened the event was greeted by a goodly number of purchasers and it was only a few minutes before the sale was in rapid motion. Shortly after 9 o'clock, a half hour after opening, 86 ranges had been sold. From that time the sale was given momentum



and with a number of telephone orders coming in from the outside representatives it was soon apparent that the goal would be attained—and in a much quicker time than had been anticipated.

Of course, it was expected that the 163 ranges would be sold by afternoon closing time but it was not expected that they would be sold before noon which was the result.

There is only one conclusion to be derived from the unusually successful result of the event—each department was thoroughly in accord with the proposition, that is, the outside selling force, the inside sales people, the advertising de-

163 REBUILT GAS RANGES

at Savings of from $19.20 to $23.55 Under Present Prices

We guarantee every range—we know they will give wonderful service—that's only one feature of every Oriole Range. Here's an opportunity to purchase a new model Oriole Gas Range at an unusual saving. These ranges were in use but a short time and we know that they will give just as good service as a brand-new one.

Come and see what fine models are being offered at extraordinary savings. Every range is an Oriole range.

Each range will be "tagged" so it is sold. This will eliminate any possibility of making more sales than we have ranges to offer. Remember—"be early and tag your range"—is the selling plan for this bargain sale. Six per cent. off for cash payment.

Every Range Guaranteed--Only 163 Ranges to be Sold--First Come, First Served--Be Early!

23
of These Ranges
Sale Price $76.75
Save $20.75

This range has the adjustable broiler—an exclusive Oriole feature. There are six ranges with right-hand ovens and 17 with left-hand ovens. There are only 23 of this model and with the saving of $20.75 each they won't remain in the store a long time.

No Money Down----Easy Terms

3
of These Ranges
Sale Price $74.00
Save $20.45

This model is known as the Kitchenette Range. It combines durable qualities, a rich appearance, economy in operation and complete satisfaction in every particular. A splendid range for an apartment—where space is limited. Buy one on easy terms.

No Money Down----Easy Terms

42
of These Ranges
Sale Price $25.25
Save $12.00

A trim, easy-to-keep-clean range. Occupies but little space, is economical to operate and will give just as good service as a brand-new one. Ask to see No. 161. Put your name on the tag—it will be delivered promptly—pay for it on easy terms.

No Money Down----Easy Terms

47
of These Ranges
Sale Price $43.25
Save $19.40

When have you had a chance to save over $19 on such an important housekeeping necessity as an Oriole Gas Range? This model is of quality construction to the minutest detail. If you want this model "tag" it early—and save $19.40!

No Money Down----Easy Terms

9
of These Ranges
Sale Price $63.25
Save $19.20

Here's an opportunity to save $19.20! Who wouldn't grasp such a chance in a hurry? This fine range has the adjustable broiler and will prove the source of genuine cooking comfort for a long time. Sale price, $63.25—easy terms.

No Money Down----Easy Terms

30
of These Ranges
Sale Price $54.75
Save $23.55

The saving on this range under the present price is $23.55—don't let such a money-saving chance slip by. These ranges are in perfect condition and will be sold with our regular guarantee. This model will be one of the first to be sold—hurry!

No Money Down----Easy Terms

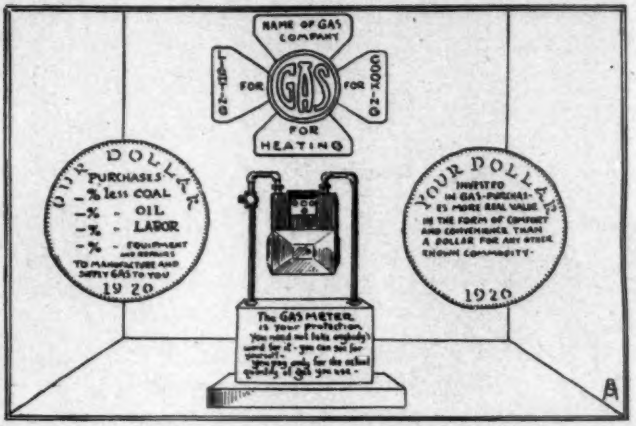
Be Early!
Only 163 Oriole ranges to be sold. First come, first served. Buy a range and save money. Every range is an Oriole range.

The Gas and Electric Co.
Lexington Building

Note:
These ranges are not the ranges taken in by the company during the "600 For Your Old Gas Range" campaign, early in the summer. Every range is an Oriole—they have been on our floor a short time. Each is guaranteed. Buy one on easy terms and save money. An extraordinary opportunity!

partment and the "heads" of these departments. Every one connected with the sale was enthused with the idea that "it can be done." It was done— in a much quicker time than the most optimistic member had imagined. Not forgetting that the value was unusual and that Baltimore housekeepers know that when the Gas and Electric Company advertises something unusual it merits immediate attention or else "they'll all be gone before noon."

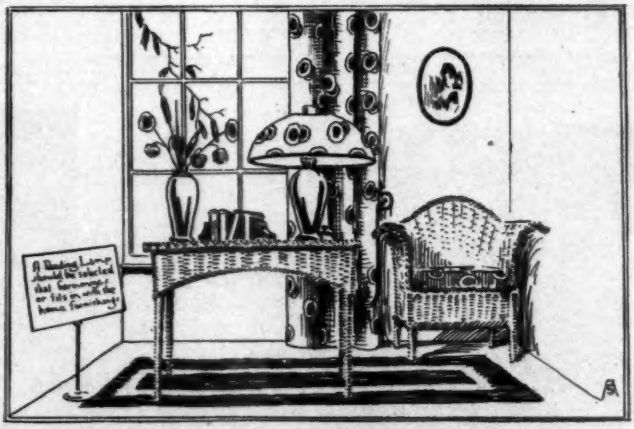
Window Display Suggestions for October



Display for Third Week in October

19a **Rate Increase**

When you mention Gas the public thinks at once of the meter. Connect a gas meter with piping, etc., on a neat looking elevation painted white (the elevation or a card can be used worded along the lines suggested) and let brightly colored and printed cards tell your story.



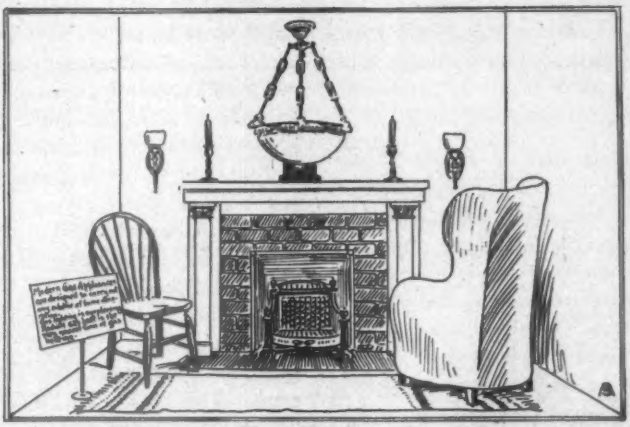
Display for Fourth Week in October

19b **Gas Table Lamps**

A painted wicker table and chair with cretonne hangings and a rug with the color predominating that harmonizes with the painted furniture, forms the setting for a lamp window that is strikingly different.

The lamp shown here is of the vase type and another vase containing fall flowers on the table will convey the idea.

The window is merely a painted sheet of Beaver Board against the background and the cretonne is draped over one side.



Display for First Week in November

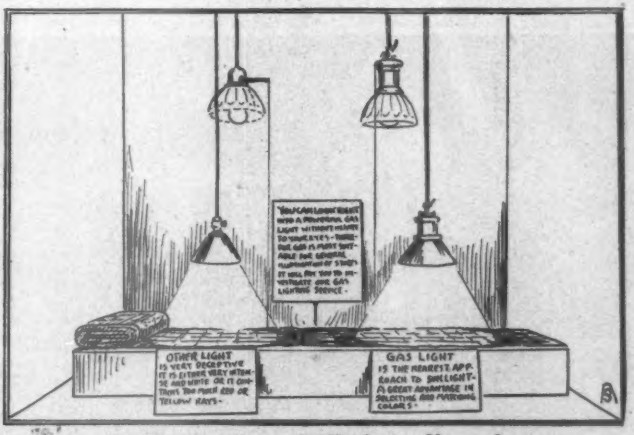
19c **Gas Lighting Fixtures**

This arrangement is suggested to emphasize the importance of having the appliances harmonize with the decorative appearance of the setting.

The Colonial idea which is so popular in the east is suggested, although there are other designs perhaps just as beautiful.

A mantle in the background fitted up with simple trimmings is equipped with a Radiant heater—two wall brackets are hung on either side—a semi-direct fixture is shown lighted in the center. The red rug, easy chair and the wooden chair in this instance will make up a most attractive display.

The accessories such as are suggested may be procured at nearly any furniture house.



Display for Second Week in November

19d **Store Lighting**

A long narrow elevation is placed well forward in window. A piece of yard goods, preferably colored plaid, is laid out along this counter.

An ordinary reflex gas lamp with green shade is suspended over the goods at the right, while an ordinary carbon or even a mazda lamp is similarly placed at the left—cards placed before each light tell the story.

Treating Tool Steel in Gas-Fired Furnaces

THE accompanying photograph shows four gas-fired tool furnaces most commonly used in nearly all up-to-date shops for heat treating tool steels.

This class of business should be particularly attractive to gas companies at the present time, as a substantial profit can be made on the sale of the equipment and the gas consumption is not such as would tend to overbalance the distribution capacity of the street mains. It is usually an intermittent demand and as such, might be counted on to work in well with the other demands on the system.

The furnaces shown here take the place of the old time coal and coke forges similar to those used in blacksmith shops. There is a great difference, however, between the operation of a gas furnace and that of an open forge. There is no bellows to operate, no coke to handle, no cinders or dirt to get in your eyes, and the furnaces do not make the room too hot to work in, as do the old time forges. There are no suffocating gases to bother you such as come from an open coke fire. All there is to do, in using a gas furnace, is to light the gas, turn on the air valve, and you get all the heat you want, when you want it, where you want it. When the steel is heated, turn off the valves.

Many of the tools now in use are made of "High Speed Tool Steel." It is called "High Speed" steel because tools made of it can be used at a higher rate of speed than tools made of the ordinary tool steel. The reason for this is that the "High Speed" steel does not soften when it gets red hot with friction, whereas the ordinary steel soon becomes soft and useless as a tool, until it is re-hardened. "High Speed" steel is very expensive and is easily ruined by not heating properly in the furnace, and this is one of the reasons why gas furnaces are used. The heat of a gas furnace is so easily controlled that you practically avoid any danger of overheating.

Editor's Note: Through error this cut appeared on page 582 of the September issue of the Monthly.

MANUFACTURERS SECTION

W. GRIFFIN GRIBBEL, Chairman — **GEORGE S. BARROWS, Vice-Chairman**

W. W. BARNES, Secretary

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BRILL, A. P., Pittsburgh, Pa.
BRUCE, HOWARD, Baltimore, Md.
COLLINS, D. J., Philadelphia, Pa.
CONROY, J. P., New York, N. Y.
CRANE, WM. M., New York, N. Y.
DEHART, J. S., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
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LOHMEYER, H. B., New York, N. Y.
MASON, SIDNEY, Gloucester, N. J.
NORTON, HARRY A., Boston, Mass.
PEFFLY, IRVING W., New York, N. Y.
REES, RICHARD, Kalamazoo, Mich.
ROBERTS, EARL W., Detroit, Mich.
ROPER, GEO. D., Rockford, Ill.
SCHALL, H. D., Detroit, Mich.
STITES, TOWNSEND, Gloucester, N. J.
WICKHAM, LEIGH, St. Louis, Mo.

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BARTLETT, C. E., Philadelphia Pa. (Pennsylvania)
BREWER, E. D., Atlanta, Ga. (Southern)
CHAPIN, C. H. B., New York, (Empire State)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
LONG, H. J., New Brunswick, N. J. (New Jersey)
MCCULLOUGH, CHAS., Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
SEIDENGLANZ, C. H., Dallas, Texas. (So. Central)
SCHALL, H. D., Detroit, Mich. (Michigan)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Membership—WM. M. CRANE, New York, N. Y.
Apparatus Makers—D. J. COLLINS, Philadelphia, Pa.
Nomination—WM. M. CRANE, New York, N. Y.
Exhibition—W. GRIFFIN GRIBBEL, Philadelphia, Pa.
Illustrated Lectures—GEORGE S. BARROWS, Chairman
Division of Meter Manufacturers—DONALD MCDONALD, Chairman, W. P. HUTCHINSON, Vice-Chairman
Division of Gas Range Manufacturers—WM. M. CRANE, Chairman, I. W. PEFFLY, Vice-Chairman
Division of Water Heater Manufacturers—H. J. LONG, Chairman
Division of Office Labor Saving Devices Manufacturers—H. B. LOHMEYER, Chairman, E. J. FERRIS, Vice-Chairman
Division of Heating Appliance Manufacturers—GEO. S BARROWS, Chairman
Division of Industrial Appliance Manufacturers—S. TULLY WILSON, Chairman
Division of Lighting Appliance Manufacturers—J. P. CONROY, Chairman
Division of Apparatus & Works Manufacturers—J. S. DEHART, JR., Tempory Chairman
Division of Supply Manufacturers—R. MUELLER, Temporary Chairman
Division of Accessories Manufacturers—B. RYAN, Temporary Chairman

"Success waits upon ability and loyalty. Let's go!"—*Geo. B. Cortelyou*

Company Member

The Seal of

STANDARD PRODUCT AND ASSOCIATION SUPPORT

All company members, Manufacturers Section, are urged to use the above emblem on all stationery, catalogues and literature as company members of this Association.

Membership

THE following firms have taken Company membership in the Association as well as advantage of the opportunity of demonstrating their product at our coming Exhibition as noted in the list of exhibitors–American Gas Appliance Co., Brooklyn, N. Y.; M. T. Davidson Co., New York, N. Y., and the Novo Manufacturing Co., Inc., New York, N. Y.

While our increase in membership seems to be slow, it is encouraging from month to month to show additional companies who are of that progressive spirit and believe in association support.

Honor Roll

GEORGE W. PARKER,	—	12 Manufacturer Company Members
CLARENCE H. FRENCH,	—	1 Manufacturer Company Member
RICHARD REES,	—	1 Manufacturer Company Member
H. A. NORTON,	—	1 Manufacturer Company Member
J. B. KLUMPP,	—	1 Manufacturer Company Member
HEADQUARTERS,	—	14 Manufacturer Company Members
H. J. LONG,	—	1 Manufacturer Company Member
CHAS. T. AARON,	—	1 Manufacturer Company Member
J. B. SLATTERY,	—	1 Manufacturer Company Member
J. H. MCFADDEN,	—	1 Manufacturer Company Member

Exhibition

At the meeting of the Exhibition Committee on August 18, the following allotment of spaces was made, notice of which has been sent to each exhibitor:

No.
1. Young Brothers Co., Detroit, Mich.
2. B. Ryan Co., New York, N. Y.
3. Humphrey Co., Kalamazoo, Mich.
4. Will W. Barnes, East Orange, N. J.
5. The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
6. General Gas Appliance Co., New York, N. Y.
7. The Surface Combustion Co., New York, N. Y.
8. Quick Meal Stove Co. Div., St. Louis, Mo.
9. J. B. Slattery & Bro., Inc., Brooklyn, N. Y.
10. The Crandall Pettee Co., New York, N. Y.
11. Atlantic Tubing Co., Providence, R. I.
12. Novo Mfg. Co., Inc., New York, N. Y.
13. New Process Stove Co. Div., Cleveland, Ohio.
14. Strause Gas Iron Co., Philadelphia, Pa.
15. Welsbach Co., Gloucester, N. J.
16. Welsbach Co., Gloucester, N. J.
17. The Eclipse Stove Co., Mansfield, Ohio.
18. The Hoffman Heater Co., Lorain, Ohio.
19. The Michigan Stove Co., Detroit, Mich.
20. Eriez Stove & Mfg. Co., Erie, Pa.
21. NuStyl Gas Iron Co., Chicago, Ill.
22. Barnett Foundry & Machine Co., Irvington, N. J.
23. Robertshaw Mfg. Co., Youngwood, Pa.
24.
25. Ruud Mfg. Co., Pittsburgh, Pa.
26. Chambers Mfg. Co., Shelbyville, Ind.
27. The Milwaukee Gas Specialty Co., Milwaukee, Wis.
28. Meek Oven Mfg. Co., Westport, Conn.
29. The Lovekin Water Heater Co., Philadelphia, Pa.
30. Cabso Sales Co., Gowanda, N. Y.
31. The G. S. Blodgett Co., Burlington, Vt.
32. Grinnell Co., Inc., Providence, R. I.
33.
34. The A. H. Wolff Gas Radiator Co., New York, N. Y.
35. Eastman Mfg. Co., Manitowoc, Wis.
36.
37.
38. Reliable Stove Co. Div., Cleveland, Ohio.
39.
40. Bishop Gutta-Percha Co., New York, N. Y.
41. Wm. M. Crane Co., New York, N. Y.
42. American Gas Appliance Co., Brooklyn, N. Y.
43. Walker & Pratt Mfg. Co., Boston, Mass.
44. Roberts & Mander Stove Co., Philadelphia, Pa.
45. George D. Roper Corp., Rockford, Ill.
46. James B. Clow & Sons, Chicago, Ill.
47. General Gas Light Co., New York, N. Y.
48. General Gas Light Co., New York, N. Y.
49. A-B Stove Co., Battle Creek, Mich.
50. The Kompak Co., New Brunswick, N. J.

51. Reznor Mfg. Co., Mercer, Pa.
52. The Ofeldt Gas Fired Boiler Co., Inc., Nyack, N. Y.
53. The Bryant Heater & Mfg. Co., Cleveland, Ohio.
54. The DeMatteis Broiler System Co., Inc., New York, N. Y.
55. Comstock-Castle Stove Co., Quincy, Ill.
56. Charles A. Hones, Inc., Brooklyn, N. Y.
57. Peninsular Stove Co., Detroit, Mich.
58. Abram Cox Stove Co., Philadelphia, Pa.
59. Johnson Gas Appliance Co., Cedar Rapids, Iowa.
60. The J. H. Grayson Mfg. Co., Athens, Ohio.
61. Detroit Stove Works, Detroit, Mich.
62. Union Stove Works, New York, N. Y.
63. Pittsburg Water Heater Co., Pittsburgh, Pa.
64. Weir Stove Co., Taunton, Mass.
65. Royal Art Glass Co., New York, N. Y.
66. George M. Clark & Co. Div., Chicago, Ill.
67. National Stove Co. Div., Lorain, Ohio.
68. The Cleveland Heater Co., Cleveland, Ohio.
69. The Improved Appliance Co., Brooklyn, N. Y.
70. Rathbone, Sard & Co., Albany, N. Y.
71. The Estate Stove Co., Hamilton, Ohio
72.
73.
74.
75. Elliott-Fisher Co., Harrisburg, Pa.
76.
77. Underwood Typewriter Co., New York, N. Y.
78.
79.
80. Kalamazoo Loose Leaf Binder Co., Kalamazoo, Mich.
81. Burroughs Adding Machine Co., Detroit, Mich.
82. Burroughs Adding Machine Co., Detroit, Mich.
83. The Lattimer-Stevens Co., Columbus, Ohio.
84. The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
85. The Sprague Meter Co., Bridgeport, Conn.
86. Bacharach Industrial Instrument Co., Pittsburgh, Pa.
87. The Koppers Co., Pittsburgh, Pa.
88. S. R. Dresser Mfg. Co., Bradford, Pa.
89. United Lead Co., New York, N. Y.
90. Superior Meter Co., Brooklyn, N. Y.
91. The U. G. I. Contracting Co., Philadelphia, Pa.
92.
93. M. T. Davidson Co., New York, N. Y.
94. Precision Instrument Co., Newark, N. J.
95. National Tube Co., Pittsburgh, Pa.
96. Connelly Iron Sponge & Governor Co., New York, N. Y.
97.
98.
99.
100. Monroe Calculating Machine Co., New York, N. Y.
101. Pittsburgh Meter Co., Pittsburgh, Pa.
102. American Meter Co., New York, N. Y.
103. Metric Metal Works, Erie, Pa.
104. The Roberts Brass Mfg. Co., Detroit, Mich.
105. The Bartlett Hayward Co., Baltimore, Md.
106. Quigley Furnace Specialties Co., New York, N. Y.
107. Republic Flow Meters Co., Chicago, Ill.
108. The West Gas Improvement Co. of America, New York, N. Y.
109. Equitable Meter Co., Pittsburgh, Pa.
110. H. Mueller Mfg. Co., Decatur, Ill.
111. The Western Gas Construction Co., Fort Wayne, Ind.
112. John J. Griffin & Co., Philadelphia, Pa.

Exhibitors are particularly requested to observe the dimensions of the booth alloted to them and have their exhibit conform to its size, as past exhibitions have proven, the most attractive and interesting exhibits were those in which the booth was not congested by a display both bulky in size and varied in the number of appliances shown.

Division of Lighting Appliance Manufacturers

On August 18, a meeting was called at Association Headquarters to complete the organization of the Division of Lighting Appliance Manufacturers and the election of a permanent chairman, Mr. J. P. Conroy of the General Gas Light Company being elected.

The suggestion from the Lighting Committee of the Commercial Section as to the advisability of having a collective gas exhibit at the coming Convention and Exhibition of the Association through a joint contribution of samples from all manufacturer company members interested in the lighting field was submitted to the Division for their consideration.

It was decided to have this collective exhibit, and Manufacturer Company members have been invited to submit samples of fixtures, brackets and portables of modern design, which will be displayed in a location separate from their individual displays. This display will be unattended. Commercial men will be expected to interview the manufacturer's representative at their respective booths relative to prices, deliveries, etc.

Considerable publicity has been given the subject of gas lighting in the past year and manufacturers are endeavoring to show their earnest co-operation and support to the commercial men of the industry in the creation of fixtures of modern design at a price which will attract business.

This year it is earnestly hoped that in order to encourage manufacturers in a continuance of their support that commercial men will come to the Exhibition prepared to place tangible orders to stimulate them in their efforts to keep gas lighting alive.

Division of Gas Range Manufacturers

The Division of Gas Range Manufacturers is pleased to note that the Abram Cox Stove Company of Philadelphia held a sales conference of its Eastern Representatives in that city on August 2 and 3 which was devoted to sales methods of all branches of the business: namely, boilers for heating with steam or hot water; warm air, and pipeless furnaces; gas, coal, and combination and coal ranges; water heaters; and laundry stoves.

The opening address of welcome was made by Mr. Robert A. Patton, President of the Abram Cox Stove Company followed by talks on "Sales Methods," "Advertising and Sales Promotion," by various members of their selling organization.

The session was concluded with a banquet on Tuesday evening at the Bellevue-Stratford Hotel which was fully enjoyed by all those in attendance.

Conferences of this kind where the individuals of an organization are brought together in personal contact, discussing matters pertinent to their product are productive of very interesting results.

On July 28, the Public Service Commission of the State of Pennsylvania convened at the Bureau of Mines Auditorium in Pittsburgh to discuss ways and means of carrying out the plans of the Committee on Natural Gas Conservation. We reprint the resolution passed at this meeting for the benefit of the members of the Division of Gas Range Manufacturers. The meeting was attended by representatives of many natural gas companies of Pennsylvania, Ohio and West Virginia; representatives of civic bodies, manufacturers and other interested parties. Effort was made to have the states of Pennsylvania, Ohio and West Virginia co-operate in a joint plan of conservation but owing to the various bills before the legislature of West Virginia, it was found impossible to secure the co-operation of three states at this time, but it is believed that eventually this end will be attained.

(Continued on page 655)

TECHNICAL SECTION

L. R. DUTTON, Chairman — W. S. BLAUVELT, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE — 1920

At Large

BLAUVELT, W. S., Terre Haute, Ind.
CASTOR, W. A., Philadelphia, Pa.
CHUBB, C. N., Davenport, Iowa.
COLLINS, D. J., (Mfr.) Philadelphia, Pa.
CONGDON, R. C., Atlanta, Ga.
DUTTON, L. R., Jenkintown, Pa.
EARNSHAW, E. H., Newark, N. J.
FIELDNER, A. C., Pittsburgh, Pa.
FORSTALL, WALTON, Philadelphia, Pa.
FULWEILER, W. H., Philadelphia, Pa.
HAFTENKAMP, J. P., Rochester, N. Y.
HAZELTINE, L. A., Hoboken, N. J.
HARPER, R. B., Chicago, Ill.
MACARTHUR, DONALD, Jersey City, N. J.
MACBETH, A. B., Los Angeles, Cal.
MACBETH, G. T., Mt. Vernon, N. Y.
NORMAN, O. E., Chicago, Ill.
NORTON, H. A., (Mfr.) Boston, Mass.
OLIPHANT, B. C., Buffalo, N. Y.
PHILLIPS, A. I., Washington, D. C.
STONE, C. H., Rochester, N Y.
UHLIG, E. C., Brooklyn, N. Y.
WEBER, F. C., New York, N. Y.
WILLIEN, L. J., Boston. Mass.

Representing Affiliated Societies

AUSTIN, E. E., Sumter, S. C. (Southern Gas)
BROWN, J. A., Jackson, Mich. (Michigan)
CHAPIN, C. H. B., New York, N. Y. (Empire State G. & E.)
CHUBB, C. N., Davenport, Ia. (Iowa)
CORNISH, R. C., Philadelphia, Pa. (Pennsylvania)
HART, J. G., Waukegan, Ill. (Illinois)
HUMPHREYS, J. J., Montreal, Canada. (Canada)
JONES, R. C., San Francisco, Cal. (Pacific Coast)
JONES, JACOB B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wisc. (Wisconsin)
NEAL, GEO. A., Hammond, Ind. (Indiana)
PAIGE, C. E., Worcester, Mass. (N. E. Gas. Eng.)
SEDBERRY, W. H., Marshall, Tex. (South Central)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Carbonization—J. P. HAFTENKAMP, Rochester, N. Y.
Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.
Chemical—E. C. UHLIG, Brooklyn, N. Y. Vice-Chairman, R. B. HARPER, Chicago, Ill.
Deposits in Meters, Services, etc. (Sub)—O. A. MORHOUS, Astoria, N. Y.
Purification—C. H. STONE, Rochester, N. Y.
Consumers Meters—W. A. CASTOR, Philadelphia, Pa. Vice-Chairman, GEO. WHERLE, Denver, Colo.
Re-Design of Distribution Systems— F. C. WEBER, New York, N. Y.
Disposal of Waste from Gas Plants—L. J. WILLIEN Boston, Mass.
Electrolysis—L. A. HAZELTINE, New York, N. Y. Vice-Chairman, ROBT. C. NEWBURY, Denver, Colo.
Gas Works Auxiliaries—C. N. CHUBB, Davenport, Ia. Vice-Chairman, R. A. CARTER, Jr., New York, N. Y.
Nomenclature—O. E. NORMAN, Chicago, Ill.
Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.

Suggested Equipment for the Recovery of Tar and Ammonia in a Small Gas Plant

* A. I. PHILLIPS, Washington, D. C.

*(EDITOR'S NOTE: Mr. Phillips' statement was submitted in reply to an inquiry from one of our company members which is printed in the Question Box of this issue. As the information submitted will be of interest to any of our companies of similar size who are contemplating the recovery of these products it is reprinted in full herewith.)

THE inquiry gives very little information as to the type of plant and apparatus at present in use, as for instance, tar extracting and ammonia scrubbing apparatus. Also the type of retort or oven installation might have some bearing on the situation.

The inquiry mentions a plant to take care of 1,000 to 2,00 gallons of tar a day, and figuring about 10 gallons of tar per ton of coal carbonized, it is evident that from 100 to 200 tons are probably carbonized per day. A recovery in the form of concentrated liquor of 4.5 to 5.0 pounds of ammonia per ton of coal may reasonably be expected, and this would mean from 450 to 1,000 pounds of ammonia per day. At 8¢ per pound this

represents a daily revenue of $36 to $80. It would well pay a plant of this size to go thoroughly into the matter of ammonia recovery. The recovery of tar is presupposed, since even the very smallest plants find that it pays.

In the recovery of tar and of ammonia in the form of weak liquor, which is the most economical way in all but large coke oven plants, a few points should always be kept in mind: (1) Practically all of the tar and as much of the ammonia as possible should be removed from the gas before it reaches the final ammonia scrubber or washing apparatus where fresh water is used, as a minimum of fresh water is then required and a greater concentration of the weak liquor thus obtained. (2) The tar and weak liquor should be effectively separated and stored separately. (3) The ammonia liquor circulated through the various apparatus should be cooled in order that it may absorb the maximum amount of ammonia from the gas. (4) All tanks in which there is either weak or concentrated ammonia liquor should be kept tightly covered.

It is difficult to suggest an exact system without knowing the plant, for very frequently facilities and equipment already on hand can be utilized to advantage with consequent reduction in the cost of the installation. For this reason it would well pay, in my opinion, for the company to have a thoroughly capable gas engineer experienced in by-product recovery visit the plant and advise it on the details of its installation.

However, a cold liquor circulating system would almost certainly be necessary. One branch of this system should extend to the hydraulic main, into which a small stream of liquor (say twice the diameter of a lead pencil) should be allowed to run continuously.

The hydraulic main should be provided with the usual type settling tanks, which are nothing more than small closed tanks set below the level of the main and having two pipe connections to it. One of these pipes should be of fairly large diameter (3 or 4 inch), and should run from the bottom of the main to the bottom of the tank; the other should run from the top of the tank to a point on the main just below the level of the seal. Each tank should also have a drain connection, a connection to the air, and filling line from the weak liquor circulating system. All five connections should be provided with valves. The tank is filled with weak ammonia liquor and is then ready for operation. All valves are closed except those leading to the hydraulic main. If properly installed, tar will continually flow from the main to the settling tank and displace the liquor because of the difference in their specific gravities, the displaced liquor of course being forced over into the hydraulic main. At regular intervals the tanks should be drained. Although this is a usual installation it has been mentioned here because it has been found that a considerable number of coal gas plant operators have not heard of t system.

If tray type ammonia scrubbers are used there should be at least two, and a generous amount of weak liquor should be furnished through a spray in all but the last one. In the last scrubber fresh water will of course be used. If there is a rotary washer instead of ammonia scrubbers, fresh water should of course be admitted into the last section, but it will be of considerable advantage to introduce a stream of weak liquor into about the sixth or eighth section from the end. It is of very great importance that no more fresh water than is absolutely necessary to remove all of the am-

monia be used, since the greater the concentration of the weak liquor the smaller will be the cost of handling it and the more satisfactory will be the operation of the concentrator and the strength c the finished product. On the other hand it is important to use enough water to recover practically all of the ammonia, and the gas should be tested frequently to insure that this is being done. Turmeric paper is often used for this. Pink litmus paper may be used successfully if the gas is low in CO_2 and is easier to get than turmeric paper. The test is somewhat similar to the lead acetate test for hydrogen sulphide. A piece of the paper is moistened with water and held in a stream of gas from the outlet of the last scrubber or washer, the gas flowing at the rate of about 5 cubic feet per hour. If the paper does not turn a deep blue in 30 seconds the gas is being satisfactorily freed from ammonia. If, however, the gas contains more than about 1½% or 2% of CO_2 this test is not satisfactory and turmeric paper must be used.

It is essential that the temperature of the gas at the outlet of the ammonia scrubbing apparatus be kept low. If possible it should be kept at about 60°. If it gets above about 70° there will be great difficulty in recovering all of the ammonia from the gas without the use of excessive quantities of water. Keeping both the gas and circulating liquor at a properly low temperature is one of the most important factors in operating such a system successfully.

It is almost always advantageous to introduce cold liquor from the circulating system at other points besides the hydraulic main and the final ammonia recovery apparatus, for example in a bubble type washer, or, in fact, almost any place where the gas will come in contact with a spray of cold liquor. Sometimes a spray can be inserted at the top of a vertical section of the gas main to good advantage. Good judgment in the laying out of the system is essential, but the main idea should be to get the maximum amount of ammonia out of the gas with the weak liquor, leaving as little as possible to be removed by the water.

All tar and liquor drains should be carried to a settling tank or separator, which should be carefully covered. A baffle plate separator similar to that used in a water gas system is very satisfactory. The tar will naturally settle to the bottom and should be drawn off several times a day and pumped to the tar storage. The liquor overflow should be at the opposite end of the separator from the drain inlets. It should lead to a small tank which will act as a reservoir for the system, and a temporary storage for the gradual accumulations of weak liquor. From here it should be pumped back through the circulating system, probably through a cooler. This can probably be made most cheaply out of pipe and return bends,—like a pipe radiator. The liquor is circulated through the pipe and water allowed to run over the coil so as to obtain the necessary cooling. From time to time the reservoir tank will become full due to the gradual accumulation of liquor, and the excess should be pumped to the weak liquor storage.

This should take care of the actual recovery system. In fact it is rather more complete than is found in the average plant. More often the circulation of liquor through the hydraulic main and the first ammonia scrubber is all that is practiced; the drains from the various apparatus run to a settling well where difference in gravity alone, unassisted by baffle plates, is trusted to accomplish the separation of the tar and ammonia; the circulating liquor is taken from the top

of this well and sent through the system without cooling; excess liquor overflows into the weak liquor storage; and tar is occasionally pumped off to the tar storage. Such a system has the advantage of simplicity and cheapness, but the liquor and tar are usually not adequately separated, the liquor is not sufficiently cooled to obtain good absorption of ammonia, and excessive quantities of fresh water have to be used to prevent its loss. Difficulties and high expense in concentration are apt to result. But in laying out the system good judgment rather than any hard and fast rule is necessary.

In this connection it should be noted that cast iron or wood tanks are preferable to steel in an ammonia system; and the same is to some extent true of the piping. Ammonia liquor, particularly if hot, will attack steel or wrought iron. The action also seems to be more serious where the surface is exposed first to the liquor and then to the air. This does not mean that steel tanks should never be used but they can not be expected to last a great length of time.

For a plant of this size a continuous type concentrator should be used. It usually pays to buy one having a capacity to handle at least double the amount of liquor that it is estimated will be made, since the saving in labor by not having to run it all the time will ordinarily more than offset the greater first cost. Provision is thus also made for future growth of business. The weak liquor might probably have a strength of about 1.5% of ammonia by weight, and from this the approximate necessary capacity for the still can be computed. One of the standard makes of still should be purchased.

Lime should be introduced at the proper point in the concentrator according to directions, in order to liberate the fixed ammonia and make possible its recovery. The lime is of course mixed with water, and is usually pumped into the concentrator by a small rotary pump. Continuous mechanical agitation should be provided in the lime mixing tank, as otherwise lumps will form and cause stoppages in the system and endless trouble.

A sample of the weak liquor obtained should be sent to a capable chemist to determine the amount of fixed ammonia and hence the amount of lime that should be used at that particular plant.

Coal tar and concentrated ammonia liquor (about 15% ammonia) are products most usually made at plants of the size indicated in the inquiry. A few of the larger ones work up their tar into pitch, paints, etc., and of course the larger coke oven plants usually make ammonium sulphate rather than concentrated liquor, but neither of these would probably be advisable in this case. Of course a considerable amount of the coal tar may perhaps be disposed of locally for painting.

As to cost I hesitate to say very much under the present abnormal conditions. A circulating system somewhat more complicated than the one here mentioned was installed some years ago for about $1500. A concentrator might cost a couple of thousand. Then there would be the building and the storage tanks. The plant owners are probably the best able to get prices and make estimates. Local conditions would have a very important bearing on the whole matter.

AMERICAN GAS ASSOCIATION, Inc.

List No. 38—October, 1920

Rate Increases Secured.

CALIFORNIA

San Francisco: Co. reports second increase effective July 24, 1920. New rate: 1st 10 MCF $1.05—next 20 MCF 95¢—next 40 MCF 90¢—next 80 MCS 85¢—next 150 MCF 80¢—over 300 MCF 75¢ per M. B. t. u. 550. M. M. Chge. Flats and Apts., 4 or more meters, one service 60¢ per meter, all other service 75¢ per meter. Applies to Alameda, Albany, Berkeley, Emerysville, Oakland, Piedmont and contiguous territory.

ILLINOIS

Waukegan: Co. reports second increase effective May 1, 1920. New rate: 1st 5 MCF $1.40—next 5 MCF $1.35—next 10 MCF $1.30—next 10 MCF $1.25—over 30 MCF $1.15 per M, disc. 10¢ per M each block. P. P. Meters $1.35 per MCF.

MICHIGAN

Grand Ledge: Co. reports second increase effective July 1, 1920. New rate authorized $3.00, rate used $2.80 gross, $2.70 net per MCF 15 days.

Grand Rapids: Co. reports third increase effective July 1, 1920. New rate: $1.60 gross, $1.50 net 10 days. B. t. u. remains at 550. Increase for ninety days only.

Muskegon: Co. reports increase effective July 1, 1920. New rate: 1st 10 MCF $1.70—next 15 MCF $1.60—over 25 MCF $1.50 per M, disc. 10¢, 15 days. M. M. Chge. 75¢ per month per meter.

NEW JERSEY

Belmar: Coast Gas Co. reports increase effective Aug. 1, 1920. Old rate: $1.50 net per MCF. New rate: $1.85 net per MCF. S. Chge. 3 and 5 lt. meters 25¢ and 1¢ added per lt. for larger.

NEW HAMPSHIRE

Dover: Co. reports second increase effective Aug. 16, 1920. New rate: 1st 10 MCF $2.10—next 20 MCF $2.00—over 30 MCF $1.90 per M, disc. 10¢ per M 10 days. S. Chge. 2, 3 and 5 lt. 25¢—10 lt. 30¢—20 lt. 35¢—30 lt. 40¢—45 lt. 50¢—50 lt. 55¢—60 lt. 60¢—80 lt. 75¢—100 lt. 80¢—150 lt. $1.10—200 lt. $1.40—250 lt. $1.70 per month.

NEW YORK

Binghampton: Gas Works reports second increase effective July 1, 1920. Old rate: M. M. Chge. up to 400 cf. 55¢—1st 10 MCF $1.25—over 10 MCF $1.15 per M. New rate: M. M. Chge. the same—1st 10 MCF $1.55—over 10 MCF $1.45 per M.

Cohoes: Power & Light Co. reports increase effective Aug. 1, 1920. Old rate: $1.30 per MCF. New rate: $1.30 per MCF plus S. Chge. $1.00 per month.

Fulton: Fuel & Light Co. reports increase effective May 1, 1920. Old rate: 1st 2 MCF $2.10—next 3 MCF $1.85—next 5 MCF $1.60—over 10 MCF $1.10 per M, disc. 10¢ per M 10 days. M. M. Chge. $1.00 same disc. New rate: 1st 10 MCF $2.50—next 10 MCF $1.90—over 20 MCF $1.35 per M, disc. 10¢ per M 10 days. S. Chge. 35¢ per month.

Granville: Electric & Gas Co. reports increase effective July 1, 1920. Old rate: $2.00 net per MCF. M. M. Chge. 50¢ per M. New rate: 1st CCF $1.00—over 1 CCF 25¢ per CCF.

Malone: Light & Power Co. reports increase effective Aug. 1, 1920. Old rate: $1.75 per MCF. New rate: $2.20 per MCF.

Middletown: Orange County Public Service Corp. reports increase effective Aug. 1, 1920. New rate: 1st 25 MCF $2.00—over 25 MCF $1.80 per M.

Syracuse: Co. reports increase effective Aug. 1, 1920. New rate: 1st 1000 MCF 95¢ net per M—over 1000 MCF 90¢ net per M. Supplies Onondaga $1.05 net per MCF.

Troy: Gas Co. reports increase effective July 26, 1920. New rate: $1.50 per MCF—1st 100 MCF $1.40—next 100 MCF $1.30—over 200 MCF $1.20 per M. Old rate: 50¢ less per M each block.

VIRGINIA

Richmond: City of Richmond reports increase effective Aug. 1, 1920. Old rate: $1.00 per MCF, penalty 5% per month. New rate: 1st CCF $1.00—over 1 CCF 25¢ per CCF.

(Continued on page 654)

Classified Directory--Manufacturers of Gas Equipment

Company Members Only, American Gas Association, Inc.

ACETIC ACID

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

ARC LAMPS (Gas)

General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

AUTOMATIC CONDENSATION RECEIVERS

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

BENCHES

J. H. Gautier & Co., Jersey City, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Gas Machinery Co., Inc., Cleveland, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BENCH IRON WORK

Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

BOILERS (Gas)

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Hugo Manufacturing Co., West Duluth, Minn.
Wm. Kane Mfg. Co., Inc., 1915 Adams St., Philadelphia, Pa.
Kidde & Co., 169 Chambers St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
The Ofeldt Gas Fired Boiler Co., Inc., Nyack-on-the-Hudson, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BOILERS (Gas for House Heating)

Dodd Heating Systems Limited, Toronto, Ont.
Kidde & Co., 169 Chambers St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

BOILERS (Waste Heat)

The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BLOWERS, BOOSTERS, EXHAUSTERS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
Maxon Furnace and Engineering Co., Muncie, Ind.
The Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.
Wilbraham-Green Blower Co., Pottstown, Pa.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

BRAZING TABLES

Rathbone, Sard & Co., Albany, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BRICK, FIREBRICK

Gas Machinery Co., Cleveland, Ohio.
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Improved Equipment Co., New York, N. Y.
Laclede-Christy Clay Products Co., St. Louis, Mo.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
Missouri Fire Brick Co., St. Louis, Mo.

BROILERS (Hotel)

Geo. M. Clark & Co., Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The De Matteis Broiler System Co., Inc., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
The Michigan Stove Co., Detroit, Mich.

BURNERS (Industrial)

American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
International Hale Gas Mixer Co., Providence, R. I.
Hugo Manufacturing Co., West Duluth, Minn.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The Maxon Furnace & Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

BURNERS (Lighting)

American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS
By-Product Coke Corp., Chicago, Ill.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Semet-Solvay Co., Syracuse, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

BY-PRODUCT RECOVERY APPARATUS
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio

BY-PRODUCT RECOVERY APPARATUS
The Koppers Co., Pittsburgh, Pa.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

CALORIMETERS
American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
The Brown Instrument Co., Phila., Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Superior Meter Co., Brooklyn, N. Y.

CASING, TUBING (Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

CASTINGS (Grey Iron)
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
The Western Gas Construction Co., Fort Wayne, Ind.

CHARGING COAL
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

CHIMNEYS (Radial Brick)
Alphons Custodis Chimney Construction Co., Marquette Bldg., Chicago, Ill.

COAL AND COKE (Conveyors, Crushers, Screeners)
R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
Riter-Conley Company, Pittsburgh, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Godfrey Conveyor Co., Elkhart, Ind.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS
The Barrett Company, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, 5 Collins Ave., Detroit, Mich.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Hays Mfg. Co., Inc., Erie, Pa.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Kitson Co., 2837 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Pratt & Cady Company, Inc., Hartford, Conn.
Standard Brass Works, Detroit, Mich.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.

COMPOUND FOR CLEANING GAS METERS AND GAS STOVES
Standard Chemical & Supply Co., Cambridge A, Mass.

COMPRESSORS
Plant Engineering & Equipment Co., 192 Broadway, New York, N. Y. (Air Compressors).
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

CONDENSERS
Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

COOKING AUXILIARIES
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The G. S. Blodgett Co., Burlington, Vt.
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Scott Gas Appliance Co., 1311 E. St., N. W., Washington, D. C.

COUPLINGS
S. R. Dresser Mfg. Co., Bradford, Pa.

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECALCOMANIA PRODUCTS
The Meyercord Co., Inc., Chamber of Commerce Bldg., Chicago, Ill.

DISINFECTANTS
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

DYES, DISINFECTANTS, DRY COLORS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

ELECTRIC CONTROLLING DEVICES
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

ELEVATORS
Craig Ridgway & Son Co., Coatesville, Pa.
Phillips, Lang & Co., Chicago, Ill.

ENAMELS AND JAPANS (Heat Resisting)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

EXCHANGERS (Heat)
The Bartlett Hayward Co., Baltimore, Md.
Riter-Conley Company, Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

EXPERT APPRAISAL
Steere Engineering Co., Detroit, Mich.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

FITTINGS
A-B Stove Co., Battle Creek, Mich.
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Kitson Co., 2827 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Standard Brass Works, Detroit, Mich.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.
The Western Gas Construction Co., Fort Wayne, Ind.
Welsbach Co., Gloucester, N. J.

FITTINGS (Malleable Iron)
Stanley G. Flagg & Co., 1421 Chestnut St., Philadelphia, Pa.

FLEXIBLE TUBING AND ENDS
Atlantic Tubing Co., Providence, R. I.
Bishop Gutta Percha Co., 420 E. 25th St., New York, N. Y.
Eastman Mfg. Co., Manitowoc, Wis.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Titeflex Metal Hose Corp., Badger Ave., Newark, N. J.

FLASHLIGHTS AND BATTERIES
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Novo Mfg. Co., 424 W. 33rd St., New York, N. Y.

FUEL BRIQUETTING
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
General Briquetting Co., 25 Broad St., New York, N. Y.

FURNACES
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace and Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.

GAS ENGINES
The Bartlett Hayward Co., Baltimore, Md.

GAS ENGINE COCKS AND VALVES
Standard Brass Works, Detroit, Mich.

GAS IRONS
A-B Stove Co., Battle Creek, Mich.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Milwaukee Gas Specialty Co., Milwaukee, Wis.
NuStyl Gas Iron Co., Chicago, Ill.
Strause Gas Iron Co., Philadelphia, Pa.

GAS LOGS
Backus Heater & Foundry Co., Inc., Boston, Mass.
The Mead Gas Heater Co., Delawanna, N. J.
Strait & Richards, Inc., Newark, N. J.

GAS MAIN BAGS AND GAS MAIN STOPPERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York City.

GAS MIXERS
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Grinnell Co., Inc., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
Improved Appliance Co., Inc., 419 Kent Ave., Brooklyn, N. Y.
International Hale Gas Mixer Co., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace & Engineering Co., Muncie, Ind.
Strait & Richards, Inc., Newark, N. J.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Carbureted Water)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)
Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS RANGE WATER HEATERS

Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.

GOVERNORS, PRESSURE VACUUM & PUMP

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

HEATERS (Room)

Backus Heater & Foundry Co., Inc., Boston, Mass.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Geist Mfg. Co., Atlantic City, N. J.
Grinnell Co., Inc., Providence, R. I.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
The J. H. Grayson Mfg. Co., Athens, Ohio
Hugo Manufacturing Co., West Duluth, Minn.
Illinois Specialty Mfg. Co., Bloomington, Ill.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
Masdon Mfg. Co., Cambridge, Mass.
New Process Stove Co. Div., Cleveland, Ohio
Reliable Stove Co. Div., Cleveland, Ohio
Reznor Mfg. Co., Mercer, Pa.
Roberts & Mander Stove Co., Philadelphia, Pa.
J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.
Strait & Richards, Inc., Newark, N. J.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Mead Gas Heater Co., Delawanna, N. J.
The Ohio State Stove & Mfg. Co., Columbus, Ohio.
The Sanitary Heating Co., 233 37th St., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

HEATERS (Garage)

Kidde & Co., 169 Chambers St., New York, N. Y.
Masdon Mfg. Co., Cambridge, Mass.

HEATERS (Pressing and Soldering Irons)

Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Strait & Richards, Inc., Newark, N. J.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

HIGH PRESSURE SYSTEMS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York City.
Selas Co., 521 W. 23d St., New York, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

HOLDERS (Structural Steel Works))

Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Riter-Conley Company, Pittsburgh, Pa.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

HOT PLATES

A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Michigan Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
Union Stove Works, 20 Beekman St., New York, N. Y.
Weir Stove Co., Taunton, Mass.

IRONING MACHINES

American Ironing Machine Co., 168 N. Michigan Ave., Chicago, Ill.
Barnett Foundry & Machine Co., Lyons Ave., Irvington, N. J.

INCINERATORS

Estate Stove Co., Hamilton, Ohio
Odorless Incinerator Co., Philadelphia, Pa.
Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)

American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
The Brown Instrument Co., Phila., Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 563 Washington Blvd., Chicago, Ill.
Steere Engineering Co., Detroit, Mich.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

INSULATING MATERIALS

Celite Products Co., 11 Broadway, New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.

KILNS (For Firing Glass, China and Pottery)

B. F. Drakenfeld & Co., Inc., 50 Murray St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.

The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

LIGHTERS (Ranges)
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Will W. Barnes, East Orange, N. J.
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Safety Gas Lighter Co., Haverhill, Mass.
Strause Gas Iron Co., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Kramer Bros. Lamp Co., 585 Broadway, New York, N. Y.
Royal Art Glass Co., 243 Canal St., New York, N. Y.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)
Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Welsbach Co., Gloucester, N. J.

METAL RECEPTACLES
American Gas Furnace Co., 24 John St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

METERS
American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Cleveland Gas Meter Co., Cleveland, Ohio
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Metric Metal Works, Erie, Pa.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.
Rotary Meter Co., 52 Vanderbilt Ave., New York, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METERS (Air and Steam)
Pittsburgh Meter Co., East Pittsburgh, Pa.
Republic Flow Meters Co., 563 Washington Blvd., Chicago, Ill.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.
American Meter Co., 105 W. 40th St., New York, N. Y.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Lattimer Stevens Co., Columbus, Ohio
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.

METERS (Steam, Condensation, Oil, Hot and Cold Water)
Pittsburgh Meter Co., Gasoline, East Pittsburgh, Pa.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.

METER PROVERS
American Meter Co., 105 W. 40th St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METER SHELF
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

OFFICE LABOR SAVING DEVICES
Addressograph Co., Chicago, Ill.
Burroughs Adding Machine Co., Detroit Mich.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kalamazoo, Mich.
Library Bureau, Boston, Mass.
Monroe Calculating Machine Co., Woolworth Bldg., New York, N. Y.
Remington Typewriter Co., 374 Broadway, New York.
The Rand Co., North Tonawanda, N. Y.
Underwood Typewriter Co., Vesey St., New York, N. Y.

OIL (Diaphragm)
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Superior Meter Co., Brooklyn, N. Y.

OVENS (Baking and Cooking)
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Famous Oven Manufacturing Co., 110 W. 42nd S., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.

The G. S. Blodgett Co., Burlington, Vt.
The Crandall-Pettee Co., Hudson St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Union Steel Products Co., Ltd., Albion, Mich.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

OVENS (Annealing, Japanning, Drying, Core, etc.)

Famous Oven Manufacturing Co., 110 W. 42nd St., New York, N. Y.
Gehnrich Indirect Heat Oven Co., Inc., 62 Franklin Ave., Brooklyn, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., New York, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.
Young Bros. Co., Detroit, Mich.

OVENS (Warming)

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.

PAINTS (Metal Protective, Gas Holder, Acid Resisting, Coal Tar Pitch, Gas Resisting, Marine)

The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

PHOTOMETERS

American Meter Co., 105 W. 40th St., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, Boston, Mass.

PIPE

Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS

Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Davis & Farnum Mfg. Co., Waltham, Mass.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Isbell-Porter Co., Newark, N. J.
Gas Engineering Co., Ingram Ave., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES

Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
National Machine Works, Sheffield & North Aves., Chicago, Ill.

PIPE PACKING

Celite Products Co., 11 Broadway, New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Passaic Metal Packing Co., Passaic, N. J.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)

Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

PORCELAIN ENAMEL PARTS (Stoves, Lamps, Linings, Stamping and Spinnings)

Baltimore Enamel & Novelty Co., Baltimore, Md.
Eclipse Gas Stove Co., Rockford, Ill.
The Enamel Products Co., Cleveland, Ohio
The Porcelain Enamel & Mfg. Co., Baltimore, Md.
The Union Steel Products Co., Ltd., Albion, Mich.

PORCELAIN ENAMEL PLANTS (Installers)

The Porcelain Enamel & Mfg. Co., Baltimore, Md.

PRESSURE GAUGES

American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Brown Instrument Co., Phila., Pa.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Gas Machinery Co., Cleveland, Ohio
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
Nathaniel Tufts Meter Works, Boston, Mass.

PRESSURE GAUGES (Boiler, Naphtha, Oil, Steam, Tar)

M. T. Davidson Co., 154 Nassau St., New York, N. Y.

PUMPING ENGINES

M. T. Davidson Co., 154 Nassau St., New York, N. Y.

PUMPS

American Meter Co., 105 W. 40th St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Nathaniel Tufts Meter Works, Boston, Mass.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y. (Centrifugal, Reciprocating & Sump).
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS

Camden Iron Works, Camden, N. J.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Newark, N. J.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

PURIFYING MATERIALS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Eph Lyon, Trust Company Bldg., Franklin, Pa.
Gas Purifying Materials Co., Long Island City, N. Y.
J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.
Iron Hydroxide Co., Paschall Station, Philadelphia, Pa.

PYROMETERS

The Brown Instrument Co., Phila., Pa.

RADIATORS

American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
Cabco Sales Co., Gowanda, N. Y.
James B. Clow & Sons, Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Hugo Manufacturing Co., West Duluth, Minn.
Kidde & Co., 169 Chambers St., New York, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Mead Gas Heater Co., Delawanna, N. J.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

RANGES (Domestic)

A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Chambers Manufacturing Co., Shelbyville, Ind.—(Fireless type)
Bartlett & Co., Inc., Philadelphia, Pa.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Dangler Stove Co. Div., Cleveland, Ohio
Eclipse Gas Stove Co. Div., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
National Stove Co. Div., Lorain, Ohio
New Process Stove Co. Div., Cleveland, Ohio
Quick Meal Stove Co. Div., St. Louis, Mo.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Roberts & Mander Stove Co., Philadelphia, Pa.
Scott Gas Appliance Mfg. Co., Commercial House, Pottstown, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Eclipse Stove Co., Mansfield, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Michigan Stove Co., Detroit, Mich.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Peninsular Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Union Stove Works, 70 Beekman St., New York, N. Y.
Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.

RANGES (Hotel)

Geo. M. Clark & Co. Div., Chicago, Ill.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Eclipse Gas Stove Co. Div., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Roberts & Mander Stove Co., Philadelphia, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Michigan Stove Co., Detroit, Mich.

REFRACTORY MATERIALS

J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
Laclede-Christy Clay Products Co., St. Louis, Mo.
Mount Union Refractories Co., Mount Union, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

REGULATORS (Governors)

American Meter Co., 105 W. 40th St., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Reynolds Gas Regulator Co., Anderson, Ind.
Steere Engineering Co., Detroit, Mich.
The Brown Instrument Co., Philadelphia, Pa.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Sprague Meter Co., Bridgeport, Conn.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

REDUCING VALVES (Gas, Air, Steam, Water)

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

REPAIRS (Gas Meters and Appliances)

Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

RETORTS

Gas Machinery Co., Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Riter-Conley Co., Pittsburgh, Pa.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The West Gas Improvement Co. of America, 150 Nassau St., New York, N. Y.

ROOF CEMENTS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

RUST PREVENTIVE
Superior Laboratories, Grand Rapids, Mich.

SCRUBBERS
Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

SELLING AGENTS
Compania de Cocinas y Calentadores, Havana, Cuba

SEPARATORS (Oil and Steam)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

SERVICE BOXES, CLAMPS, Etc.
Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

SOAPS (Industrial)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

SPECIALS—CAST IRON
Camden Iron Works, Camden, N. J.
The Western Gas Construction Co., Fort Wayne, Ind.

STEAM TRAPS
Plant Engineering & Equipment Co., Inc., (Corliss Valve) 192 Broadway, New York, N. Y.
Pratt & Cady Co., Inc., Hartford, Conn.

STILLS (Benzol, Toluol)
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
The Bartlett Hayward Co., Baltimore, Md.
The Koppers Co., Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

STOVES (Confectioners, Laundry, Tailor)
A-B Stove Co., Battle Creek, Mich.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The General Gas Appliance Co., 103 Park Ave., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

STRAINERS (Gas, Air, Steam, Water)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

STRUCTURAL STEEL WORKS (See Holders)

TANKS (Ammonia, Oil, Water)
Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOMETERS
American Meter Co., 105 W. 40th St., New York, N. Y.
Brown Instrument Co., Philadelphia, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Gas Instrument Co., Ingram Ave., Trenton, N. J.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOSTATS
Brown Instrument Co., Philadelphia, Pa.
Gas Machinery Co., Cleveland, Ohio
Kidde & Co., 169 Chambers St., New York, N. Y.
Minneapolis Heat Regulator Co., Minneapolis, Minn.
B. Ryan & Co., 372 W. 15th St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

THERMO VALVES
Brown Instrument Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Robertshaw Mfg. Co., Youngwood, Pa.

THORIUM
Welsbach Co., Gloucester, N. J.

TRENCH WORK
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

TURBINE (Steam)
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Isbell-Porter Co., Newark, N. J.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Pratt & Cady Co., Inc., Hartford, Conn.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

VALVES (Needle Valves for Gas Stoves)
The Roberts Brass Mfg. Co., Detroit, Mich.

VARNISHES (Insulating and Compounds)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

WATER HEATERS
A-B Stove Co., Battle Creek, Mich.
Bartlett & Co., Inc., Philadelphia, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Dayton Mfg. Co., Dayton, Ohio
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Humphrey Co. Div., Kalamazoo, Mich.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
The Kompak Company, New Brunswick, N. J.
New Process Stove Co. Div., Cleveland, Ohio.
Peninsular Stove Co., Detroit, Mich.
Philadelphia Stove Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Ruud Mfg. Co., Pittsburgh, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Heater Co., Cleveland, Ohio
The Hoffman Heater Co., Lorain, Ohio
The Lovekin Water Heater Co., 39 Laurel St., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
Toombs Mfg. Co., Geneva, Ill.

WATER STILLS (Gas Heated)
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Young Bros. Co., Detroit, Mich.

WELDED STEEL PIPE
The Bartlett Hayward Co., Baltimore, Md.
The Western Gas Construction Co., Fort Wayne, Ind.
Steere Engineering Co., Detroit, Mich.

WOOD PRESERVATIVES
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

(*Continued from Rate Increase List, page 646*)

WISCONSIN

Rhinelander: Oneida Gas Co. reports increase effective Aug. 1, 1919. Old rate: $1.50 gross, $1.35 net. New rate: $2.00 gross, $1.80 net per MCF. Co. reports second increase effective Aug. 1, 1920. New rate: $2.50 gross, $2.35 net per MCF. M. M. Chge. $1.00.

• The Building Program as Affected by the Plight of the Gas Companies

(*Continued from page 617*)

yet returns from 150 cities in various sections of the country under regulated rates show that the average price of gas has advanced but 15 per cent. in five years — from $1.09 per thousand cubic feet to $1.26 per thousand.

"Housing as well as construction of all kinds means a new demand for gas service. For gas companies to extend their service means that they must have new capital. To obtain this capital, the gas manufacturer must demonstrate to the investor that he can continue to operate and maintain a satisfactory service. To keep up such a service, he must be able to establish a rate that will permit extensions and enable him to meet present prices of coal, gas oil and coke, and still live."

The Second Annual Convention of the American Gas Association

November 15-20, 1920

Modern Journals for Corporation Accounting

(*Con. from page 624*)

Office. At the latter place, the Interchange Bills are matched, and when found to agree are attached to one another. They are then numbered and stamped with the month of entry. The schedule shown in Fig. I is also used to record the transactions with the appropriate heading, number and accounts properly inserted. It is in balance when the total debits offset the total credits.

In conclusion it might be mentioned that there are other schedules which could have been described but it is believed that those which have been made the subject of discussion in these articles are of such importance as to be worthy of special consideration and perhaps introduction. It was not the desire, either, to describe the various schedules minutely but to bring before the accounting executives the possibilities of the system by imparting information of sufficient amount to create the proper enthusiasm and interest. After all, it is not the volume of reading matter which makes the subject important as the idea which the writer had in mind when he undertook the task, and that is—the abandonment of the obsolete and cumbersome journal.

Concluding Manufacturers Section

(*Con. from page 640*)

NATURAL GAS UTILIZATION RULES.

PENNSYLVANIA GAS COMPANY.

RESOLVED: That the following rules and regulations be adopted governing the supply of gas to our patrons:

From its present source of supply and as the same may after be supplemented or maintained, the company will endeavor to maintain such pressure in its distribution systems as will enable its patrons to have adequate service provided that the gas is consumed in proper and efficient appliances.

In order to regulate its service the following clasification is adopted:

DOMESTIC USE.

Domestic use includes lighting, cooking, heating water for domestic purposes and heating by the use of proper gas consuming appliances.

COMMERCIAL USE.

Commercial use includes annealing furnaces, linotype machines, high temperature steel tempering processes, laboratory, scientific and other similar quantities for purposes where other methods cannot reasonably be applied.

On and after December 1, 1920, the company will supply gas only for domestic and commercial purposes, as above designated, and reserves the right at its discretion to curtail the use of gas for commercial purposes, during the period of excessive demand, for the benefit of domestic consumers.

All gas must be consumed by the use of proper and efficient appliances, properly regulated and adjusted; no burner in cook stoves shall be placed more than one and one-half inches from the bottom of the vessel to be heated and all cook stoves and ranges shall have open or grid tops; all piping on patrons' premises, including service pipe from shut-off box, shall be in proper condition to render adequate service.

No gas will be furnished for daylight lamp burning.

No gas furnished by the company shall be consumed through or in any coal heating or other coal consuming appliance.

After November 1, 1920, the company reserves the right to discontinue the service furnished to any patron, after reasonable notice where such patron does not use gas in an economical manner in compliance with the rules of the company.

The company will on proper notice furnish to its patrons, free of cost, instructions how gas may be consumed efficiently and economically, and the company will make adjustments and alterations in appliances at net cost to the consumer as far as it is reasonable to do so.

Issued by authority of the

Public Service Commission of Pennsylvania

July 19, 1920.

Employment Bureau

SERVICES REQUIRED

WATER GAS—Experienced water gas maker wanted. Gas Works vicinity of New York. Address—American Gas Association, 130 East Fifteenth Street, New York, N. Y.

Key No. 4

WANTED—Thoroughly experienced gas appliance salesman. State age, reference and salary expected. Address—American Gas Association.

Key No. 7

WANTED—Man with experience in the selection of leather and the manufacture of gas meter diaphragms, to take charge of and develop a shop for the making of diaphragms. A good opportunity for the right man. Address The Laclede Gas Light Co., 1017 Olive St., St. Louis, Mo.

Key No. 9

SERVICES OFFERED

WANTED—Position as manager in city of 60,000 or over by college graduate of 16 years connection with gas business. A successful record as manager of 2 gas companies, and as superintendent of one of the largest gas plants in U. S. Has had practical experience in every branch of the business and has made good. Address American Gas Association.

Key No. 102

WANTED—Position as gas engineer or manager by a man of large experience in both capacities in manufacture and distribution of coal or water gas. 38 years of age with excellent references. Address—American Gas Association, 130 East 15th St.

Key No. 103

WANTED—Young man desires a position with opportunities. Present location 5 years and cannot go higher. Thoroughly trained and experienced in water gas operation. New business and management. Address—American Gas Association.

Key No. 104

WANTED—Young man 32, experienced manager and office manager desires position with a combination company. Salary $250.00 per month. Address—American Gas Association.

Key No. 106

WANTED—Position as superintendent wanted by technical man, married, 30 years of age, experienced in manufacture of water gas and high and low pressure distribution. Can furnish best of references. Address—American Gas Association, 130 East Fifteenth St., New York, N. Y.

Key No. 108

WANTED—Position as Manager or Assistant in medium size town. Has had 15 years experience in coal and water gas and electric operation. Technical graduate. Any location. Address—American Gas Association.

Key No. 109

WANTED—Position as Industrial Power and Fuel Engineer. Technical engineer and salesman of excellent qualifications for industrial power and fuel sales. Now employed $3000. Address—A. G. A.

Key No. 111

WANTED—Position as Superintendent of a Coal and Water Gas Plant having a practical experience in the manufacture of same. Age 44 years and married. Salary $250 per month. A-1 references, can take up duties at once. Address A. G. A.

Key No. 112

WANTED—Position as manager or superintendent, by a reliable and experienced young man, who has held important positions and made good in construction work and operating end of the gas business. Can furnish A-1 references. Address A. G. A.

Key No. 113

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by the N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.

Key No. 114

WANTED—Position in auditing staff or in general office of a gas or electric company. Have experience in all branches of commercial utility work—both practical and theoretical. Address A. G. A.

Key No. 115.

AMERICAN GAS ASSOCIATION, INC.

HEADQUARTERS 130 EAST 15TH ST., NEW YORK, N. Y.

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